

NOT TO BE TAKEN AWAY.

[REPORT]

Annual Report

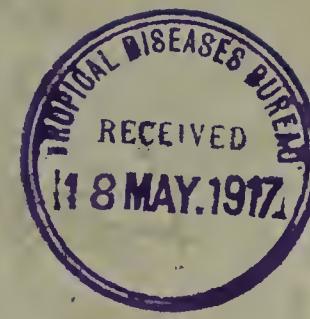
OF THE HEALTH OFFICER



CORPORATION OF MADRAS

HEALTH DEPARTMENT

FOR



1915

Madras:

PRINTED BY THOMPSON & CO., AT THE "MINERVA" PRESS,
33, POPHAM'S BROADWAY.

1916



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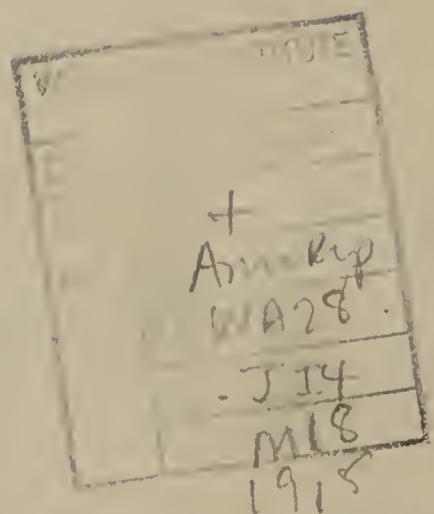
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MAP OF MADRAS

SCALE 1 INCH = 1 MILE

Furlongs 8 6 4 2 0 1 2 Miles



REFERENCE

— Madras District boundary

19 } Municipal Division boundary & number

||||| Rail road & station



CORPORATION OF MADRAS,
HEALTH DEPARTMENT,
Madras, 4th July, 1916.

FROM

DR. K. RAGHAVENDRA RAO, B.A., M.B. & C.M.,

Ag. Health Officer, Corporation of Madras,

Madras.

To

THE PRESIDENT,

Corporation of Madras,

Madras.

SIR,

I have the honour to submit the Annual Report on the health of the City and the Administration of the Health Department for the calendar year 1915.

I take this opportunity of thanking the three Assistant Health Officers for their co-operation and advice in all matters concerning public health. The outdoor subordinates have rendered useful service, as also the indoor staff in the discharge of their work.

I have the honour to be,

Sir,

Your most obedient servant,

K. RAGHAVENDRA RAO,

B.A., M.B. & C.M.,

Ag. Health Officer.

Corporation of Madras.

HEALTH DEPARTMENT.

Annual Report for 1915.

GENERAL INTRODUCTION.

1. The year 1914 showed the highest death-rate (*viz.*, 46.6 *per mille*) for **A Retrospect of Health Conditions in 1914.** the last eight years and the lowest birth-rate, *viz.*, 35.2 *per mille* of population (population 5,18,660 according to census of 1911). Infantile mortality was also very high,

being 308.9 *per 1,000* births registered. The very severe outbreak of Cholera in that year was mainly responsible for such unfortunate conditions of the health of the City. The registered deaths from this disease were responsible for 3.4 *per 1,000* of the population and these figures do not, of course, represent the actual total mortality from this disease. The errors are chiefly due to the fact that a large number of deaths from Cholera are registered as Dysentery and Diarrhoea, this being the information received by burial ground watchmen or Medical Registrars. Hence it is that the figures for Cholera, Diarrhoea and Dysentery put together (in fact, for all bowel complaints generally) are a more reliable index of a prevailing epidemic of Cholera than the figures of registered deaths for any one of these diseases. The other causes of mortality were more or less the same as in previous years, Malaria and Respiratory diseases being responsible for the usual number of deaths.

2. The health conditions during the year under review were very favourable as compared not only with the previous year but **Year 1915.** also with the previous ten years.

3. It is not claimed that this satisfactory state of things was entirely due to any special achievements of the Corporation during the year under review. Much of our good fortune in having passed through a comparatively very healthy year is doubtless attributable to natural causes. Nevertheless, the Corporation has done something to contribute to this desirable end, although it can certainly do very much more.

4. The total number of deaths that occurred during the year (exclusive of still-births) was 18,688 as against 24,174 in the year 1914, representing a death-rate of 36 *per mille*. The death-rate in the City is thus the highest among the Presidency towns. If, however, the death-rate of Madras were corrected for age, it would not figure so unfavourably in comparison with the other three Cities. It is the lowest since 1897, when it was 35.5. The mean ratio for the previous five years is 41.3.

Death-rate.	
Bombay	... 24.17
Calcutta	... 28.50
Rangoon	... 29.03
Madras	... 36.00

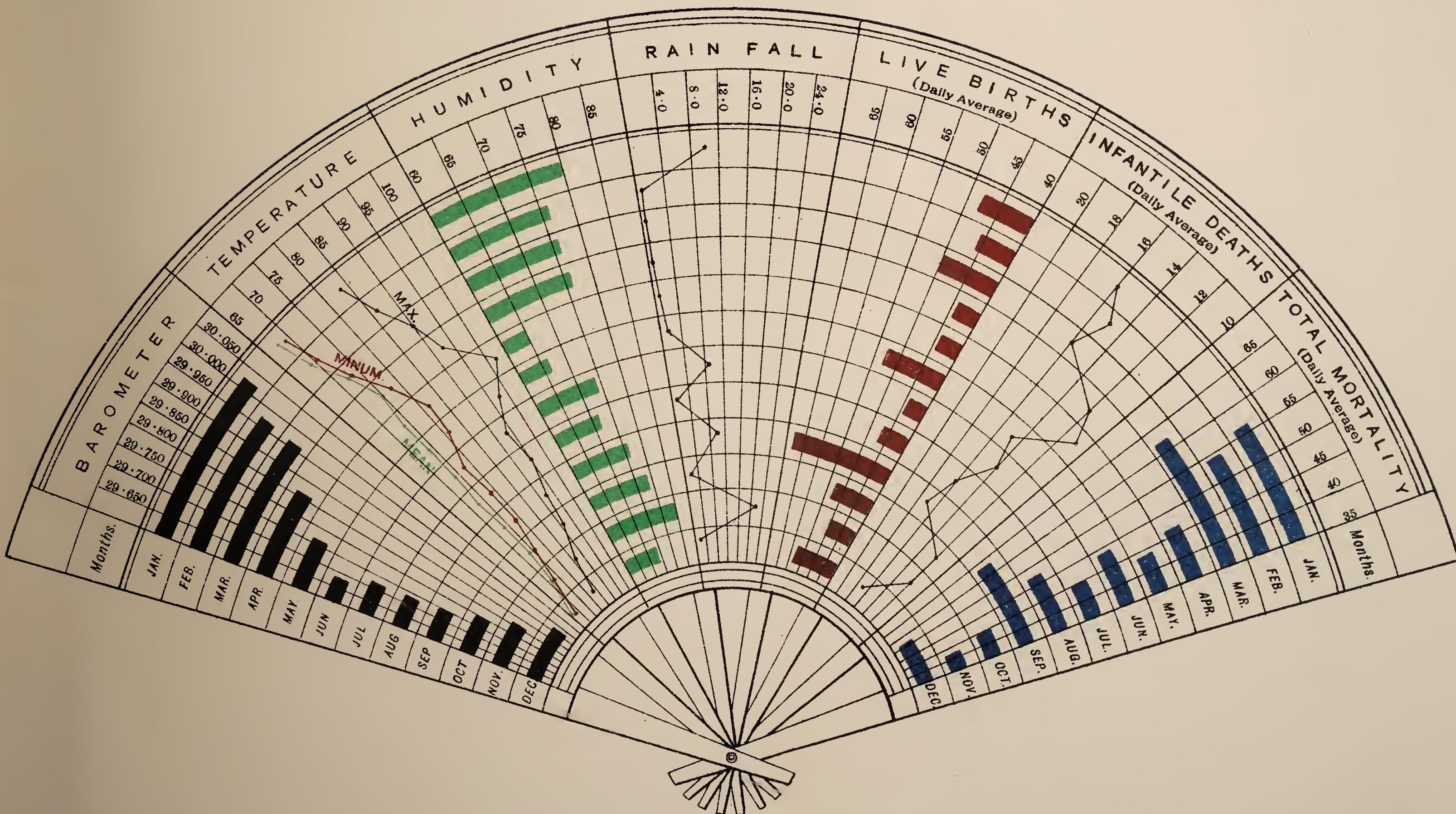
5. The most outstanding feature in the health of the City during the year under review is the complete absence of any epidemic such as Cholera, Small-pox or Malaria. Looking at the death-rates for the last ten years, one cannot help observing that there is apparently a sort of periodicity in the increase of death-rates. From the graph facing page 40 of the report, it will be seen that the years 1905, 1908, 1911 and 1914 show a death-rate of 59.0, 43.7, 42.0 and 46.6 *per mille*, respectively, the death-rates for the other years during the decennium being less than 40 *per mille*. In the years 1905, 1908 and 1914 there were epidemics of Cholera and in 1911, a number of deaths from malarial fevers in certain parts of Madras was responsible for the rise. This certainly offers an explanation for the high death-rates in these particular years but not exactly for the apparent quartan periodicity.

6. Causes tending to lower the death-rate in 1915 were an improved water-supply, the inauguration of anti-malarial operations and a general improvement in the conservancy arrangements of the City. Each of the above has its own share. The water-supply is much improved; not only the quantity of water available under the increased pressure system is greater than before, but also the quality of water is good from the larger number and greater efficiency of filters working at present. Complaints there have been about the presence of suspended matter in the water from the tap and in one case even mosquito larvæ were said to have been obtained in a sample of water drawn directly from a domestic tap. It is possible that the iron pipes through which water formerly flowed at a comparatively low pressure had collected inside moss and other vegetable matter and the increased pressure with which water was distributed through these pipes acted as a flushing current to flush out the collected filth. During the early days of the year, these old pipes could not stand the increased pressure and there were a number of breaches necessitating the laying of fresh pipes. As regards the mosquito larvæ, it is hard to believe *a priori* that they can possibly travel through an iron pipe 6 to 8 miles in length and investigation of a specific complaint disclosed the fact that the water in which the larvæ were found had been drawn indeed from a pipe, but had been standing for a couple of days. All these, however, are merely temporary troubles; for, as the old unsuitable pipes are replaced by new ones of the proper sort, and as the filter-beds are completed and improved, further improvements both in quality and quantity must necessarily follow.

7. Anti-malaria operations are being carried on by the Special Malaria Department of the Corporation both in the direction of eradicating all known causes of the spread of Malaria, and also in preventing by timely and prompt measures, any small outbreaks in isolated localities bursting out into a widespread epidemic.

8. Much has been done in improving the conservancy and the general cleansing of the town. On the ground that departmental control was possibly unsatisfactory, this work was let out on contract for one month as an experimental measure. The contractor had to supply sweepers, scavengers and peons, whereas the Corporation supplied the carts and bullocks. The contractor could not supply

DIAGRAM
 DAILY MEAN BIRTHS, DEATHS AND CLIMATIC
 CONDITIONS IN MADRAS CITY
 DURING THE SEVERAL MONTHS
 OF
 1915.



BAROMETER

MEAN DAILY READINGS

Jan.	29.7
Feb.	29.8
Mar.	29.9
April.	30.0
May.	
June.	
July.	
Aug.	
Sept.	
Oct.	
Nov.	
Dec.	

Jan.	29.679
Feb.	29.7
Mar.	29.8
April.	29.9
May.	30.0
June.	
July.	
Aug.	
Sept.	
Oct.	
Nov.	
Dec.	

RAINFALL

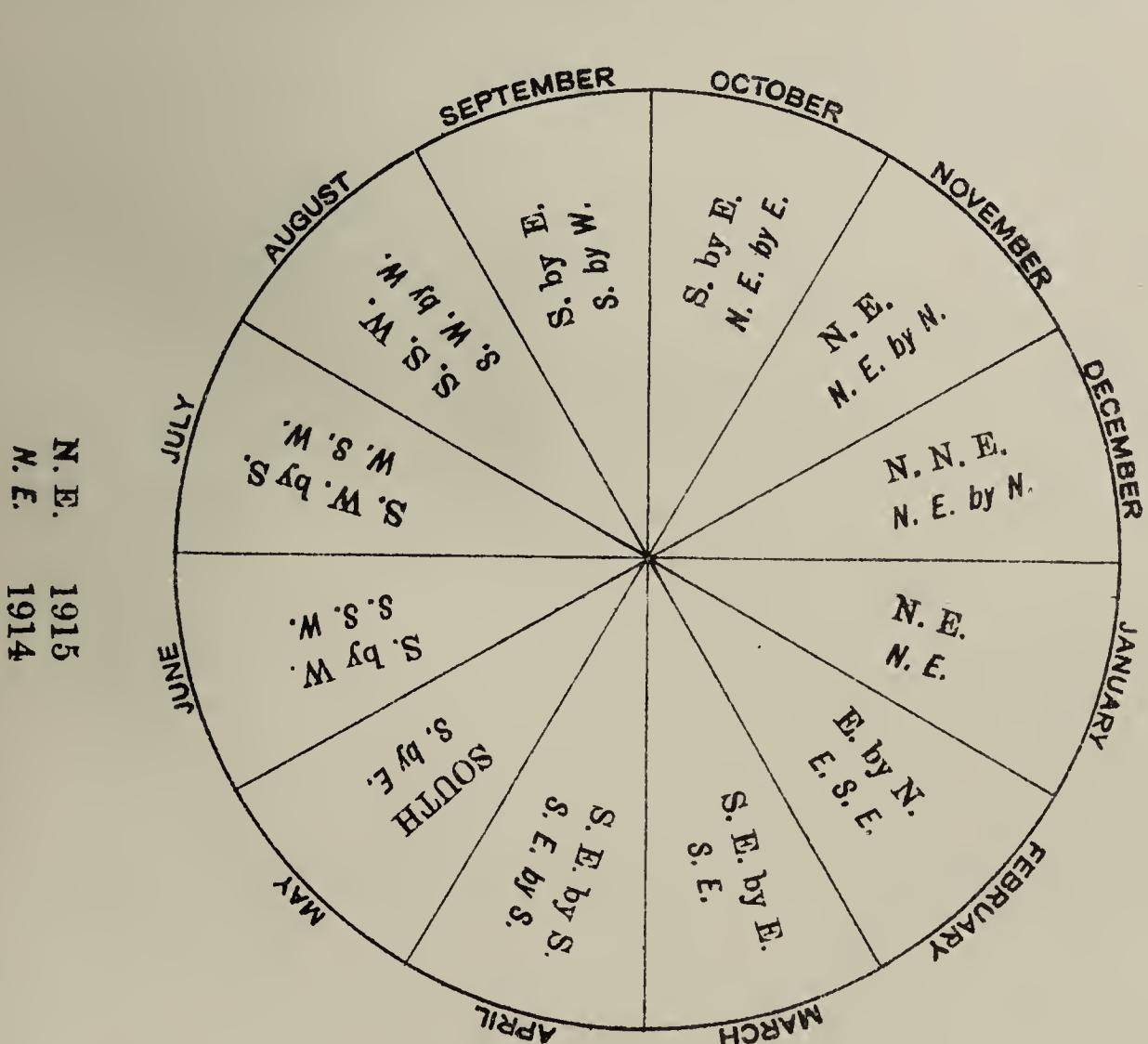
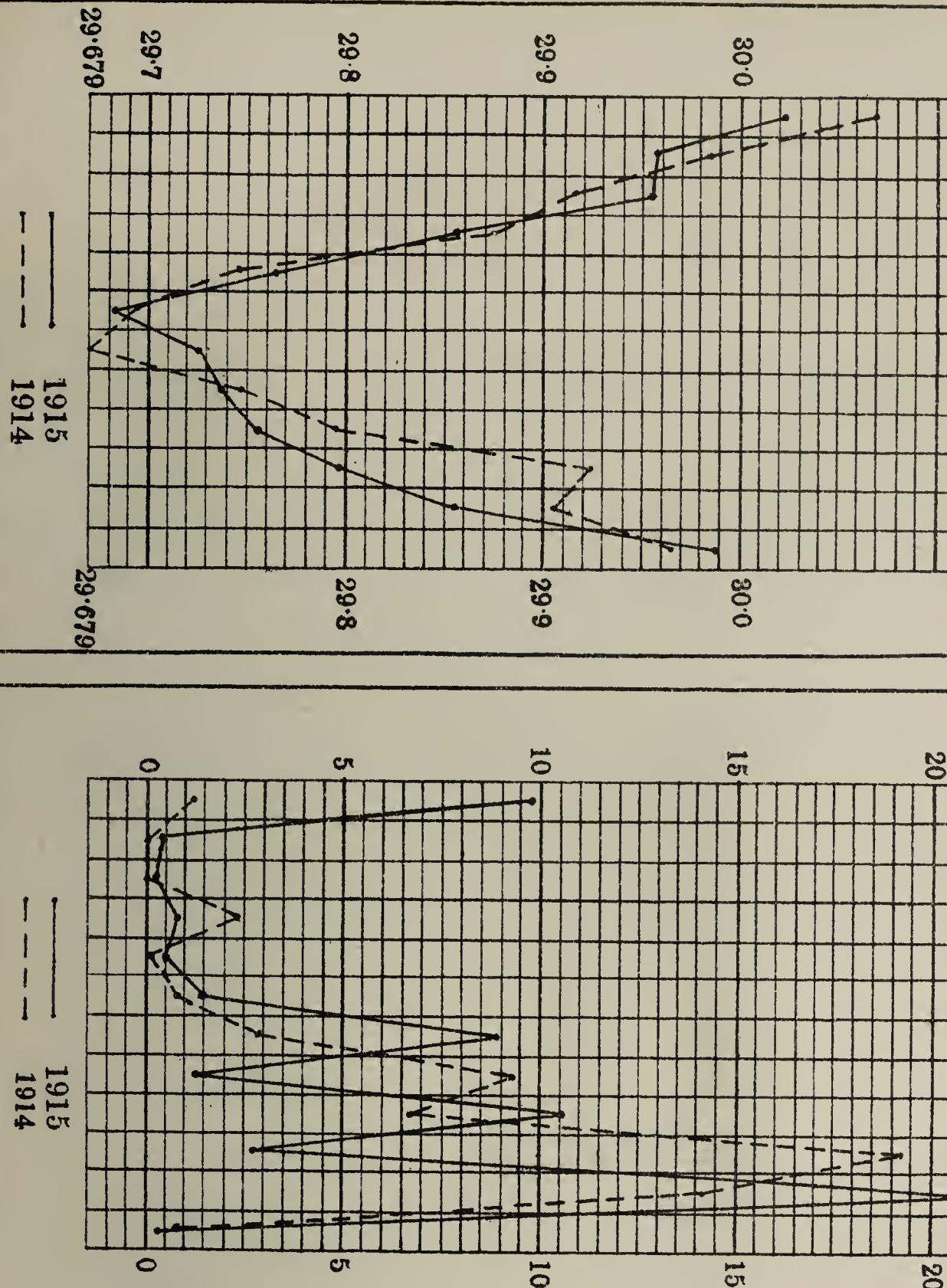
IN
INCHES

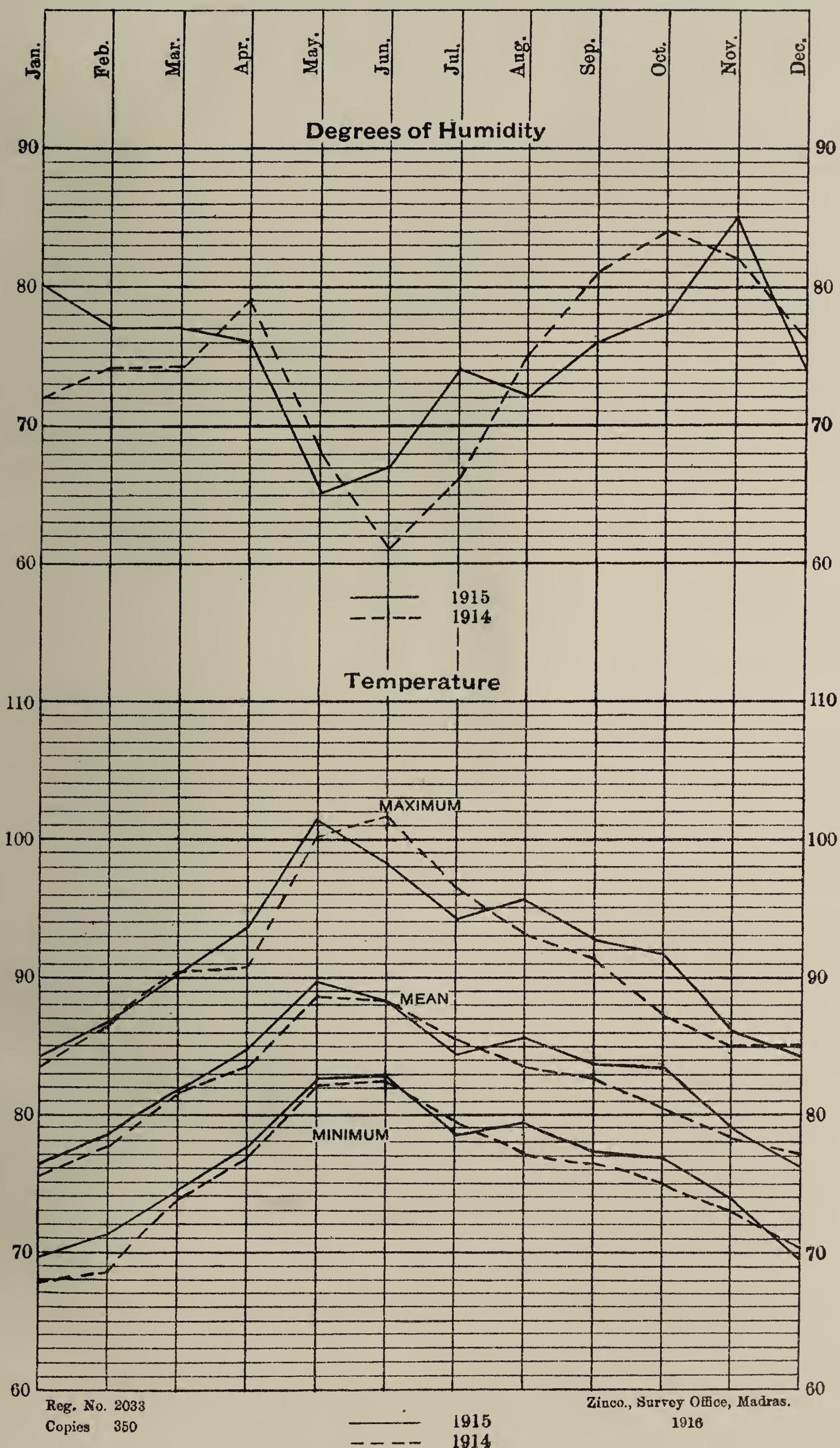
Jan.	0
Feb.	5
Mar.	10
April.	15
May.	20
June.	
July.	
Aug.	
Sept.	
Oct.	
Nov.	
Dec.	

Jan.	0
Feb.	5
Mar.	10
April.	15
May.	20
June.	
July.	
Aug.	
Sept.	
Oct.	
Nov.	
Dec.	

PREVAILING DIRECTIONS OF WIND

1915





the labour required and the experiment proved a failure with the result that the work was taken up again departmentally. There was a great shortage of labour in the early months of the year. Conservancy coolies could not be had and there was a great dearth of supervision of the proper sort. A change was effected from July 1915. Two motor lorries were placed at the disposal of the Conservancy Section and Dr. Singaravelu, the Senior Assistant Health Officer, was placed in full charge of this work from 4th August 1915. This arrangement is working very satisfactorily.

9. The climatic conditions during 1915 may be taken as being more favourable than in 1914. The total rainfall recorded was **Climatic conditions.** 56.61 inches as against 56.63 in 1914, but was more evenly distributed throughout the year.

10. The following table shows the quarterly total rainfall in the City during the last five years :—

Year.	1st quarter.	2nd quarter.	3rd quarter.	4th quarter.	Total.	Remarks.
	January to March.	April to June.	July to September.	October to December.		
1915	10.15	2.19	20.43	23.84	56.61	
1914	1.06	2.70	18.85	34.02	56.63	
1913	0.14	2.29	6.84	55.78	65.05	
1912	2.83	1.78	8.97	33.11	46.69	
1911	...	0.64	10.92	24.97	36.53	

11. During the first quarter of 1915 there was greater rainfall than in the same period of previous four years. Rain fell on 59 days ; the largest number of days (18 days) in a month during which there were rains was in November and the lowest in the months of February, March, April and May—one day in each month.

12. Taken by months, the rainfall may be regarded as fairly well distributed during the different seasons of the year. The heaviest rainfall was in November, being 20.79 inches as against 19.22 in October 1914, whereas in November 1914, it was 14.03. The cold season started earlier in August and the months of November and December were much colder than is usual in Madras. During these months, between August and December—the usual cholera season—there were only nine cases of cholera.

13. The fall in death-rate is general and cannot be confined to any particular age group.

14. The housing conditions in Madras are admittedly unsatisfactory. Certain overcongested parts are becoming still more congested if that be possible. The concentration of numerous centres of activity such as Colleges and Schools, Banking Houses and Business Firms, Railway Offices and Harbour Works has resulted in rendering Georgetown congested. Poverty and want of cheap communications force a large number of our students as also the numerous clerks and other poor employees of our Banks, Companies, Harbour Works, &c., to crowd together in many dingy and dirty dens of Georgetown in order that they may live as near as possible to their Schools, Colleges, Offices and Workshops.

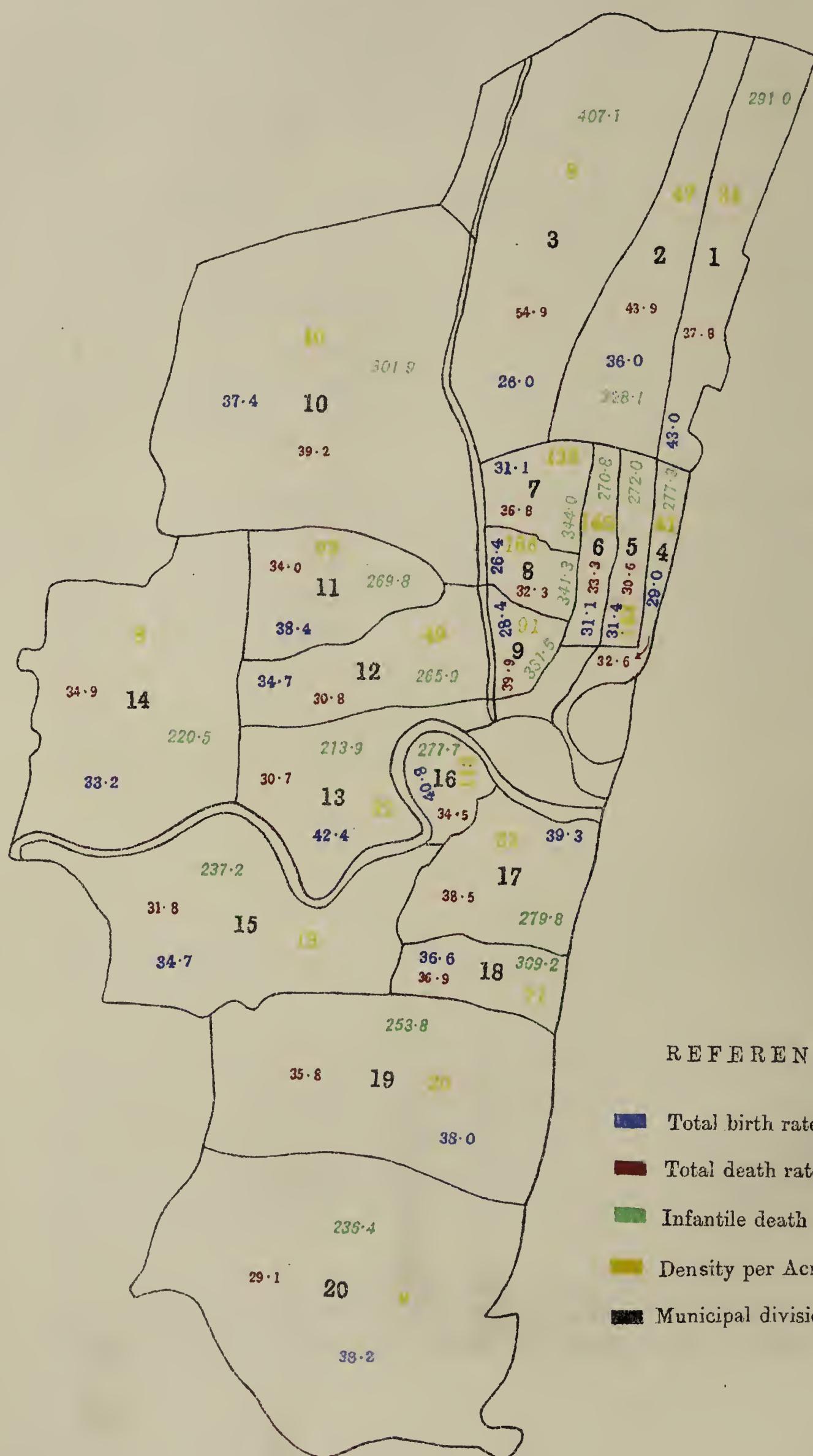
15. Moreover it is not likely that ordinarily even a philanthropic proprietor will forego in the interests of humanity the inflated rents and unearned increments which have accrued to him as a direct result of increased demand and diminished (or at any rate unincreased) house accommodation. It is by no means uncommon to find that, at every change of tenancy, the proprietor seizes an opportunity to increase the rent. Very often he lays the blame at the door of the Corporation by saying it has raised the water tax or lighting tax. It may be that the Corporation have raised the tax by $\frac{1}{2}$ per cent., but why should the landlord, therefore, raise the rent by, say, 5 per cent.?

16. The problem of overcoming congestion in such crowded and overcrowded localities can perhaps never be satisfactorily tackled by the Corporation unless all the large employers of labour, whether it be Government, Banks or Railway Companies, co-operate in building sanitary dwellings for their poorer servants, and that, at convenient distances from their business centres. Unless and until a move in this direction is made, it would be useless to prevent overcrowding in one place by putting into operation sections of the Municipal Act : the result would be that poor people thus driven out, but forced to live as near their offices as possible, would crowd some other till now uncrowded locality.

17. The municipal by-laws regarding conditions required for construction of houses are intended for the benefit of the citizens. **House constructions.** This is certainly a sort of an axiomatic truth ; but it seems necessary that both the Madras citizen and the Corporation authorities should be occasionally reminded of this fact. The usual routine to be gone through before new houses and other structures are raised, is that a plan of the proposed structure is submitted to and approved by the Corporation. This, of course, is to ensure that the structure is sanitarily not objectionable ; and hence it behoves every citizen to see that plans once sanctioned are adhered to, unless the Corporation authorities are satisfied that the changes suggested are for the better. In practice, however, the plan is seldom followed and sanction for changes is sought by any and every means. When deviations are brought to notice and steps are taken to see that sanitary regulations are not evaded, there is frequently loud complaint of municipal highhandedness.

18. Nor are the Corporation authorities always wholly free from blame. Special attention is paid in passing plans submitted to such things as one-third open space, drainage arrangements, position of latrine, size and situation of windows,

DIAGRAM
Showing the Birth, Death and Infantile
death rates and the density per acre in
each division.



REFERENCE

- Total birth rates of each division
- Total death rates do do
- Infantile death rates per 1000 of births
- Density per Acre
- Municipal divisions

&c. So far so good ; but the spirit of the by-laws must not be forgotten in too close an adherence to the letter of the law. It is as well to point out that it is very desirable that prosecutions for infringing municipal by-laws should be a last resort, instead of the first. In a large number of cases a little tact, patience and reasoning will win over the angry ratepayers and no loss of prestige is incurred in "stooping" if "conquering" is likely to result thereby.

19. Of course, it is quite true that in a large number of cases the landlord's greed results in constant attempts to evade sanitary regulations regarding open spaces, construction of latrines, &c., so that every inch of available space may be made to yield the maximum amount of rent that tenantable rooms can possibly yield. In a number of these instances the deviation adopted renders the house highly insanitary and almost all the open space is built upon. Small rooms barely large enough for one adult to stretch himself at ease are built and these tiny apartments are rented to as many tenants as possible. There is probably one latrine to serve eight or ten different families in the house and probably situated at a place not easy of access to the scavenger. Filth is added to overcrowding with the consequent result of vitiated atmosphere and sickness.

20. Newsholme says there may be little or no connection between density of population *per se* and a high mortality and that the true index **Density versus Death-rate.** is the number of persons *per* occupied room. Two localities may have the same absolute density of population and yet the death-rates may vary very widely. The reason for this is that one district is well planned with wide, main streets and open cross streets, and the other may consist mostly of closed courts and alleys with no sufficient light and ventilation. But it has been distinctly shown that in similar districts a definite relationship exists between density *per* acre and the death-rate. This is due to the fact that all things being equal density *per* acre is dependent on the number of persons *per* room, and this beyond doubt, exercises a powerful influence on sickness and death-rates. The reasons are not far to seek and they may be summarised thus :—

(1) The greater the number of persons *per* acre, the more are infectious diseases spread and the greater is the injury to health by breathing impure air.

(2) The larger the density *per* acre room the greater the degree of poverty, which means food deficient both in quality and quantity.

21. In other words, aggregation means polluted air, polluted water and soil and the easy spread of infectious disease. The more crowded a community, the greater the amount of abject want, filth, crime, drunkenness and other excesses ; the more keen is the competition and the more feverish and exhausting the conditions of life. These indirect consequences of aggregation influence the mortality much more than the direct.

22. In Madras, while it is quite true that the highest death-rates are recorded as a rule in the most densely peopled localities, yet it often happens that some divisions which are not very much congested show a higher death-rate than others which are undoubtedly amongst the most congested of localities. In 1915,

the 3rd Division heads the list with a death-rate of 54.9 and the lowest is recorded in the 20th Division. If a reference is made to the table of density of population *per* division along with the death-rates noted against each, it will be seen that in the 3rd, 14th, and 20th Divisions, the density *per* acre is lowest (8) ; whereas in the 8th Division, the density *per* acre is highest (186). But the death-rate of 8th Division is only 32.3 *per mille*.

23. Why this should be so is not easy to say. The fact seems to be that there is a very irregular distribution of the population resulting in a general mixing up of all classes, so that there is no definite west-end area of rich people as contrasted with a definite east-end slum. Even in such fashionable quarters of the rich, as Mylapore, Teynampet and Nungumbakum, there are slums and parcherries nestling among cultivated and garden lands on the one hand and extensive palaces and bungalows on the other.

24. Perhaps the best example of all is afforded by the 3rd Division where, in spite of the extensive area of the division and the lowest density of population, the death-rate is highest. It is possible that the cause of the high death-rate of the 3rd Division, in spite of its lowest density of population, is due to the great congestion and overcrowding in the southern half of the division namely, Washermanpet, Mulakothalam and Cochrane Basin Paracherry, while the northern half, which is mostly garden land with perhaps a hut or two here and there, serves to keep down the average density of population at a low level. In the 14th and 15th divisions, inhabited by Europeans and better classes of Indians, we ought to expect very favourable conditions ; and yet from the tables before us it is found that the death-rates in these divisions are 34.9 and 31.8 *per mille* respectively. This is probably due to the several parcherries and hutting areas scattered about in these divisions where all the insanitation conducive to high mortality exists.

25. Thus, it is by no means easy to lay down with any approach to exactitude which particular division or ward of Madras is healthy and which not, as healthy and unhealthy areas are promiscuously thrown together side by side in every one of these divisions or wards.

26. While perusing the weekly returns of death-rates, I was struck with a somewhat curious fact that was revealed week after week, **Death-rates by race.** namely, that death-rates amongst Hindus and Muhammadans were almost uniformly higher than amongst Europeans, Anglo-Indians and Indian Christians. The same fact is disclosed by the annual returns of death-rates shown below :—

	Death-rate <i>per mille</i>	Hindus	Brahmin	... 24.2
Europeans	... 17.2		Chetty	.. 29.8
Anglo-Indians	... 27.3		Balija or Naidu	... 31.8
Indian Christians	... 29.9		Vellala or Mudaliar	... 32.8
Hindus	... 36.0		Yadava	... 36.5
Muhammadans	... 43.3		Pariah	... 38.0
			Vannia or Naicker	... 39.7
			Viswabrahmin or Kammalar	.. 40.5
			Patnavar	... 43.7

27. But if it is true that the housing and other sanitary conditions under which certain sections of the Hindu and Muhammadan communities can afford

to live and do live are at least as good as that of the average European and Anglo-Indian and even better than those of the average Indian Christian, then it follows that certain particular sections at least of the Hindu and Muhammadan communities should show a death-rate that could bear favourable comparison with that of Europeans, Anglo-Indians and Indian Christians. Taking for example, the Brahmin community, of which I can claim to speak with some special knowledge, it is my general impression (and I am subject to correction) that the sanitary conditions under which they live are decidedly good ; and they have carried personal and domestic Hygiene to a level of efficiency that would appear incredible were it not supported by the low rate of mortality recorded in that community in contradistinction with the high mortality under the Hindu community as a whole. In the table above is shown death-rates among the several sub-sections of the Hindu community (it is to be regretted that it was not convenient to do the same for the Muhammadan community) and the figures obtained showed, as expected, a low death-rate of 24.2 *per mille* for the Brahmin community—a figure which bears favourable comparison with that of the Europeans and is lower than those both of the Anglo-Indians and Indian Christians.

28. The fact seems to be that the groups "Hindus" and "Muhammadans" are far too wide for our present purpose, including as they do both the Prince, the Nawab or the Mylapore Vakil at the one end, and the peasant, jutkawallah or the Paracherri Halalkore at the other. Further the average Brahmin maintains a higher standard of life even with limited means and under the severe stress of modern city life ; he is better educated and can adopt himself with greater ease to modern ideals of sanitation than the other classes of the Hindu community.

29. It looks therefore fallacious, so far as death-rates of communities are concerned, to generalise on figures of such a heterogenous population. A more satisfactory method seems to be to subdivide such heterogenous communities into groups which are more or less homogeneous in respect of conditions under which they "live and move and have their being."

30. The number of live-births registered was 18,331, being 90 more than in 1914. This works out to 35.3 *per mille* as against 35.2 *per mille* in 1914. In the year 1905, the birth-rate was 45.6, but since then there has been a slight variation till the year 1912 and from this latter year there is a steady fall. But whereas in previous years a high death-rate and a low birth-rate was a common feature of vital statistics for the City, the birth-rate this year is almost equal to the death-rate.

31. In the Health Report of Bombay for 1914, Dr. Turner in discussing the decline of birth-rate of Bombay, pointed out that this decline was not a feature peculiar to Bombay (an Indian metropolis), but was a common feature in many cities, European as well as Indian.

32. "The reduction has been ascribed to various causes, e.g., reduction in the number of marriages and postponement of the age of marriage in supposed conformity to social requirements or associated with economic conditions, diminution in the proportion of women of child-bearing age, variation in the fertility of

women or an ebb and flow over long periods primarily dependent on fluctuations in what is called germinal activity, and intentional reduction of births."

33. Many of these conditions apply equally to Madras as to Bombay. Nor should we forget the following factors as a result of which a number of births of children of Madras-mothers is registered in the moffusal :—

"(1) The fairly well-established custom of sending prospective mothers home to their parents, where the infant has a better chance of life—so that there is in the City a number of children belonging to the City but born outside it and therefore not registered ; (2) the omission of parents or relatives to register births, through ignorance or neglect—so that there is a certain number of children who have escaped registration."

34. In considering birth statistics by divisions we would expect to find that overcrowding and resulting insanitariness, high death-rate and high birth-rate would go hand in hand. As Dr. Williamson says "in its bearing upon future population, it is important to notice that by far the greater number of children are born in districts where their chance of being successfully reared, as clearly shown by the statistics, is most unfavourable."

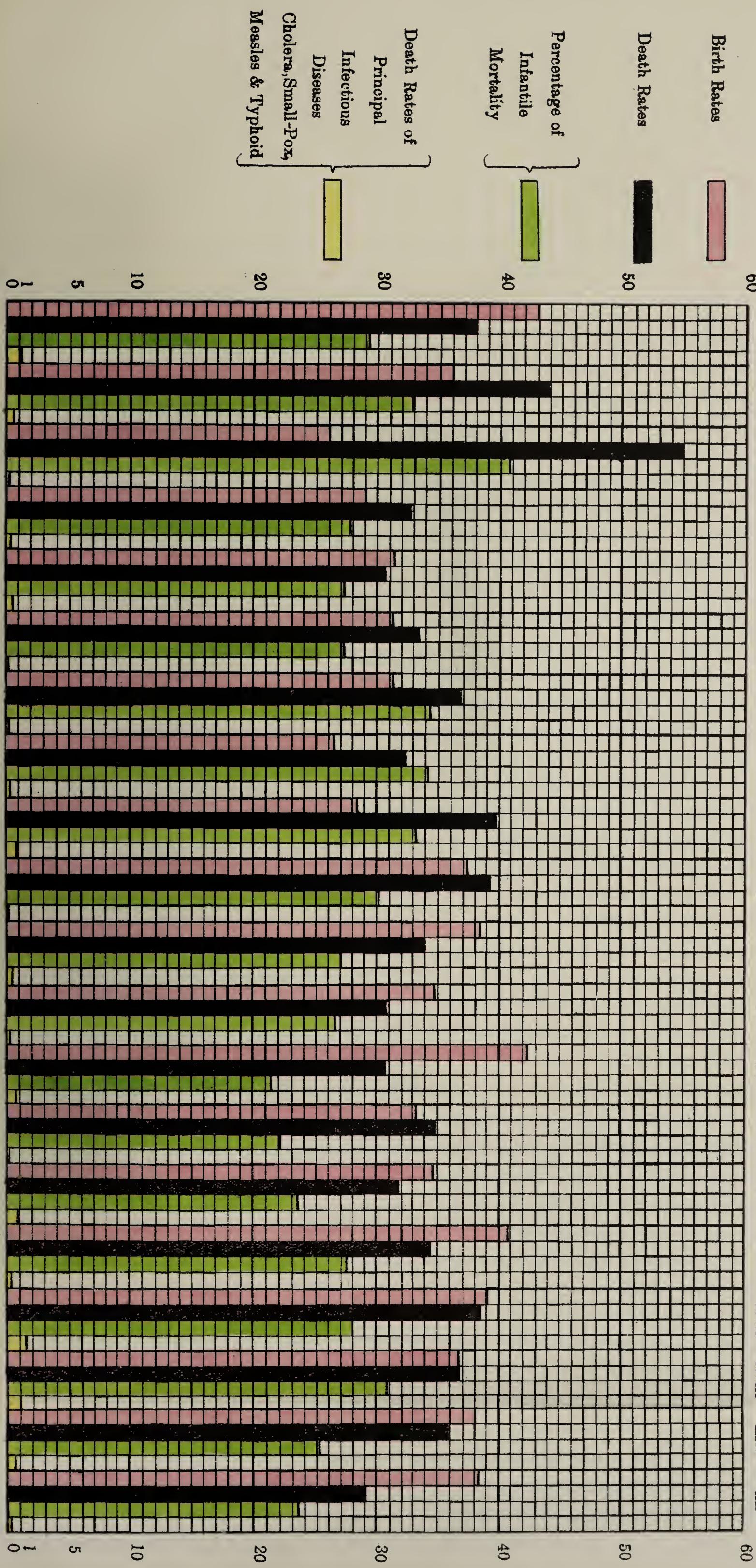
35. The coloured chart at page 10 shows that this rule does not hold good in Madras. In the 3rd and 8th divisions are recorded the lowest birth-rates of 26 and 26.4 *per mille* with death-rates of 54.9 and 32.3, respectively, whereas in the 20th division, where the lowest death-rate of 29.1 is recorded, the birth-rate is 38.2. In the 14th and 15th divisions, which may be expected to show better conditions, the death-rates and the birth-rates are 33.2 and 34.7 respectively. It is not easy to explain why this should be so ; but as pointed out under death-rates, the uneven distribution of population and the location side by side of sanitary and insanitary areas may have something to say to it.

36. The infantile mortality was 286.1 *per 1,000* births registered and though less than in 1914, it is still appallingly high. The chief **Infantile mortality.** causes of this high infantile mortality are :—

- (1) Baby-marriage.
- (2) Necessity for mothers to work and earn before and soon after labour.
- (3) General neglect of infants—under-feeding, bad feeding and under-clothing.
- (4) Insanitary surroundings.
- (5) Poverty.
- (6) Want of proper medical aid.

Over such economic and social features such as baby-marriage and poverty, the Corporation as such can possibly have no control : but "where the causes are preventable, the enormous loss of infant life can be prevented by judicious medical relief, nursing and instruction in the elements of hygiene." There is plenty of room here not only for the activities of the Corporation but also for

Diagram Showing Birth & Death Rates with Percentage of Infantile Mortality and also Death Rates From Principal Infectious diseases For the Several Divisions of the City for the year 1915





An existing insanitary cattle shed in Madras.

those of our philanthropically disposed citizens and the Social Service Leagues. To divert our incessant and even-flowing stream of charity in the direction indicated, it may require some preaching ; the immense good that can be effected by the provision of more Lying-in-Hospitals, which, by affording the mothers good food, nursing and skilled attendance, do much towards giving the infants a good start in life, has yet to be brought to the notice of some of our rich and charitably inclined citizens. Who can do this preaching better than the members of our Social Service Leagues ?

37. Side by side with the provision of more Lying-in-Hospitals, there should also be provision for municipal midwives and for the registering and training of our barber-midwives. The supply of good milk for our infants at least, is a measure of paramount necessity. The establishment of municipal milk depots for providing a supply of pure milk to children of the poor at least, may be tried, pending any extensive scheme for solving the problem of ensuring a supply of good milk for the City of Madras as a whole. How this problem is to be solved—whether it should mean a complete municipalisation of the entire supply of the City or whether it should be done by means of co-operative dairies or such like institutions has already been discussed in a special report on the subject. Closely connected with this consideration of the scarcity of good milk in Madras is the question of abuse of artificial foods. Many of these foods (except perhaps full-cream condensed milk) are unsuitable to infants and a fallacious idea—conjured up perhaps by pictures of Mellin's food babies—seems to be growing up (especially among the richer classes) that artificial milk foods are better than good cow's milk. It seems necessary to emphasise the fact that the best food for the baby is the mother's milk. The next best thing is good cow's milk and then only come even the best of artificial foods. To deprive the baby of the first two sources of supply, when they are available, is to commit a sin.

38. A look into the conditions existing in Madras with regard to the supply of good and wholesome milk will easily explain the bearing **Madras Milk Supply.** which infantile mortality has upon the want of such good wholesome milk. Almost every cattle yard is filthy and reeking with dung and urine all over. The cattle are dirty ; their teats besmeared with dung and urine ; the milkman without the least hesitation milks the cow straight off and the milk so drawn is diluted with any kind of water available at hand and then sold. In many instances, the cow is taken over to the houses and the milk drawn in the presence of the buyer. The ways of the milkman are mysterious. In the twinkling of an eye, the milk is diluted even before the apparently wide open eyes of the buyer and to the latter's wonder.

39. Milk is responsible for more sickness and deaths than perhaps all the foods combined, for the following reasons :—

1. Bacteria grow well in milk.—A very slight infection is enough to cause serious results.
2. Of all food stuffs, milk is the most difficult to obtain, handle, transport and deliver in a clean, fresh and satisfactory condition.

3. It most readily decomposes.

4. Milk is the only standard article of diet obtained from animal sources consumed in its raw state.

40. Milk is a perfect food for the suckling and is one of the cheapest of the standard articles of diet. The prospects of a healthy infant life—the future adult—depend upon the supply of good, pure and wholesome milk.

41. There is no standard of milk fixed so far as Madras is concerned. Analysis of 13 samples of milk has showed varied proportions of its chief ingredients, *viz.*, protein (nitrogenous matter), fat and milk sugar. The average composition of milk is stated in text books thus:—

Specific gravity	...	10.32						
Water	...	87.17						
Total solids <i>per cent</i> ...	12.83		Fats Solids not fat	... ...	3.69 3.43	Protein Sugar	... ...	3.55 4.88

The composition of cow's milk is as follows :—

Water	...	85.11			
Total solids <i>per cent.</i>	...	14.89	{	Fat	... 5.79
				Solids not fat	... 9.10

In some of the samples stated above the percentage of the protein-element is so low as 2.665, fat 2.348 and milk sugar only 1.623. The average of the above 13 samples works out thus :—

Water	... 89.804						
Total solids <i>per cent.</i>	10.20	{	Fat	... 3.673	{	Protein	... 3.019
			Solids not fat	... 6.69		Sugar	... 3.50

This approaches only the minimum requirements as far as proteins are concerned but not in the matter of fats and milk sugar, in both of which the milk obtainable in the City appears too poor in quality.

42. The quality of the milk needs to be very much improved. Whether or not there are any grounds for the popular belief that this watery condition of Madras milk is due to the poor feed, and to large quantities of salted water that the animal is made to drink, it is very desirable that experiments should be conducted with a view to find out the exact sort of food stuffs which would improve the quality of the present milk supply of Madras.

43. Another cause of infantile mortality is the general insanitary condition of the locality; for, all conditions detrimental to the health and life of the general population in unhealthy, crowded and insanitary areas apply with greater force to infant life. Thus the third division shows the highest infantile mortality of 407.1 *per* 1,000 births registered. The sanitary condition of this division is, as already pointed out far from satisfactory.

Common Causes of general mortality.

44. The most common causes of mortality as registered in the Corporation are :—

(1) Diarrhoea and Dysentery.
(2) Malaria.
(3) Respiratory diseases other than tuberculosis,—in their order of precedence. All these preventable diseases need some remarks.

45. There were 4,208 deaths representing a death-rate of 8.1 per mille from the marginal causes. It is sad to think that so many persons must die of these two diseases which are easily preventable by proper attention to the water we drink and the food we eat.

Diarrhoea and Dysentery. All kinds of articles good, bad, or indifferent are put up for sale and find a ready sale in Madras, whatever the quality. The establishment of a Municipal Laboratory for analysing articles of food and drink is an urgent necessity. It is quite true that this cannot prevent the buyer from purchasing a cheap and nasty article if it is exposed for sale. But these articles cannot be seized unless they are decomposed, or, are otherwise obviously unfit for human consumption. Very often such is not the case and yet the article may be extremely dangerous, either because of its chemical composition or because of its bacteriological impurity.

46. Moreover, the Municipal Act itself is somewhat defective in this respect and it is within the remembrance of many, how a case against an aerated water manufacturer for selling undoubtedly unwholesome soda-water was thrown out on the technical ground that under section 354 (2) of the Act, soda-water did not constitute an article of food coming under the purview of the said section. A similar difficulty is experienced in respect of many other sections of the Act dealing with the topic. It is hoped that these and other defects pointed out in previous reports will be rectified in the amendment of the Act which is now pending before the Legislature.

47. Respiratory diseases, excluding pulmonary tuberculosis, were responsible for 2,303 deaths or 4.4 per mille . It seems incredible that in a tropical City like Madras with a more or less equable temperature almost through out the year, *i.e.*, with no marked seasonal variations, mortality from the respiratory diseases should be so high. But the hard fact remains that it is so, though it is by no means easy to say why, although overcrowded insanitary surroundings and damp and vitiated atmosphere may have a great deal to say to the matter.

48. Small-pox, Measles, Cholera, Enteric and Malaria were endemic more or less throughout the whole year. But fortunately none of these broke out into an epidemic. Among the causes that contributed to the low mortality witnessed this year, this is certainly one that ought to be reckoned with.

Infectious diseases including Malaria. 49. 1,686 deaths were registered under deaths from Malaria, which is equal to 3.3 per mille . This is the lowest for the last five years, and to those who are engaged in carrying out anti-malaria operations in Madras, it is certainly a very encouraging feature.

50. The above are the figures as registered in the offices of the ten Medical Registrars scattered over the City. At the outset, it may be pointed out that these figures do not show accurately the causes of deaths according to medical nomenclature. When I joined this department, I questioned the accuracy of these figures and in many

instances, the recorded deaths were not accurate as regards causes. The information received and recorded by the Medical Registrar is chiefly based upon the chits of the burial ground peons who in turn, note on them the assumed cause of death as reported by the people concerned. Both these are laymen and little reliance can be placed in them. A case of Cholera is more often returned as Dysentery or Diarrhoea. A case of Enteric or Pneumonia as Malaria or simple fever. The Medical Registrars recording these statements are required to verify them by personal and such other enquiries at the houses of the deceased. But the results are not satisfactory. Firstly because, the Medical Registrars want constant supervision over their work ; secondly, they cannot get reliable information as regards the symptoms, signs, duration, &c., of the disease from which the deceased suffered. I remember that in one instance, a Medical Registrar had registered the cause of death of a beggar as 'Malaria,' and on being questioned as to why he did this, he placed before me his verification book in which he had remarked "destitute, pauper, found lying for three months on pails of houses"—Could this death not be due to starvation, kala-azar or consumption ? The person was not attended to by any one while he was ill.

51. The Municipal Act requires medical men to report causes of deaths that come under their observation within three days of death ; but, somehow, this is not done as frequently or universally as it might be. Circulars requesting them to co-operate with us have been issued but the results are not very encouraging. I take this opportunity once more of appealing to all medical men, especially of the Western system of medicine to help us with their co-operation.

52. One other cause of wrong registration is the fear and distrust that is somehow entertained by the relatives to report actual causes of deaths, especially if under infectious diseases. Such causes of deaths as Cholera and Small-pox are well known to almost every body but the fear of the municipal official, whose nuisance of disinfection and segregation they do not altogether like, very often prevents people from reporting the true causes of death.

53. The sanitarian has to base his conclusions of the health of a City on the vital statistics placed before him. The figures constituting such vital statistics ought not to be a jumble of meaningless and inconsistent numbers. Every figure put under life and death tables should carry a meaning. "The first duty of a newly appointed officer of public health should be to inform himself thoroughly as to the character and conduct of the vital statistics of the State or City of which he has charge. Dr. Harty has well called vital statistics the 'book-keeping of humanity,' and the Health Officer charged with control over the precious treasure of human life, must again and again appeal to the vital record to show how well he has discharged his trust."

54. It is therefore incumbent upon every corporate body to take steps necessary to make these figures as accurate as possible. It might be said that the easiest solution of this problem is to institute a system of compulsory

**The Importance of
Vital Statistics.**

notification of diseases, and a production of a death certificate before the disposal of a dead body.

55. But compulsory notification certainly cannot be regarded as a popular measure. Voluntary notification with the consent of the patient or his representative may be tried, but may be fruitless of results. The same remarks apply, with at least equal force, to the production of death certificates before cremation, burial or other method of disposal of the dead body is permitted. Moreover, with a very small number of medical men trained in Western medicine, a very rigid law cannot be expected to work out well. Besides it may be a hardship to the really poor that they should have to pay for such certificates or even wait for hours before such certificates are obtainable.

56. Suggestion has been made more than once of the introduction of a system of paying a small fee, say one rupee, by the Corporation to every medical practitioner certifying to the cause of each death, at least in the case of the really poor. This would doubtless involve an expenditure to the Corporation, but as pointed out above, with the comparatively small number of medical men practising in the City, this expenditure is very necessary, if the system is not to prove a failure.

57. One other point that I wish to bring up for consideration is the system that obtains in Bombay and which may profitably be introduced here. The Bombay system of registration is as follows :—

58. "For the purpose of the Registration of Births and Deaths and free Medical Relief, the City has been divided into ten districts with ten Municipal Charitable Dispensaries, each in charge of a Registrar with two Sub-Registrars and one trained Visiting Nurse and Midwife.

"Each of the District Officers is equipped with staff for registering births and deaths, enquiring into the cause of death, checking Cemetery Returns and for disinfecting houses and rooms where cases of infectious diseases may have occurred or dead rats may have been reported. The work of the Registrars is supervised by the Deputy Health Officers and the Executive Health Officer with his two Assistants."

59. With very little addition to our existing staff, this arrangement can be adopted to suit the conditions of Madras, although it may doubtless mean some extra cost in reorganization. For example we have at present three Corporation Dispensaries, two Corporation Hospitals, and three Malaria Dispensaries. These eight centres may do for Madras what the ten district centres are doing for Bombay. A further improvement in this direction can be effected by attaching a municipal midwife to each of these dispensaries. The benefits that may accrue from such a scheme are manifold, chief among which are :—

(1) Providing greater and wider medical relief.

(2) More reliable registration of births and deaths ;—of births because, the municipal midwife attached to such divisional district is working in close co-operation with the Medical Registrars and Conikapillays ; of deaths because, the

Medical Registrars have plenty of opportunities to watch cases long before they terminate fatally, thus ensuring accuracy of registration.

(3) The fact that municipal midwives are attached to particular dispensaries ensures proper control of their work and makes a separate scheme of Municipal Midwives (working directly under the Health Officer) unnecessary.

60. The satisfactory collection and removal of the rubbish of the town is a matter of great concern to the municipal executive. In Conservancy. this as in many other matters, the Act is defective and requires change. To bring this into effect, all on a sudden, would work real hardship and annoyance. Under the present system the streets are swept twice daily and the rubbish is transhipped by means of two motor lorries and a large number of rubbish carts. The rubbish consists of road-sweepings, household waste, filth, stable manure, drain silt, shop-sweepings, waste-paper, garden refuse, &c. Added to this is the overflow from syphon connections as a result of obstructions from bits of leaves, cloth, paper, stones and such articles allowed to pass through from the house. These articles ought to have been stopped by an iron grating at some point. But due to one cause or another this is not done, and the syphon gets obstructed. The cause may be the negligence of the householder or it may be "a passion for scientific experiment which leads the Madras child to stuff stones, pieces of soda-water bottles, clothes, wooden balls, &c., down his parent's syphon just to see what will happen." Whatever the cause, the result of obstruction of the syphon is overflow of sewage water into the street which goes on for some hours and sometimes for two or three days before it is stopped and as a consequence, a lot of foul sewage water stagnates in the street to the great annoyance of the public.

61. Added to our difficulties, there is the problem of obtaining sufficient and suitable labour. The scavenger is a hard man to deal with. He is often very turbulent although he can be made to work by a show of authority and by threats. Sometimes the impulse is in him and he strikes work and we are at our wits ends. Oftener still he absents himself without notice, because his masters did not consider it their duty to settle private feuds and bring about peace between him and some other members of the community at war with him ; he questions to himself why he should work for people who do not care to ensure his domestic and tribal peace and prosperity. To overcome this labour difficulty, a 'Cooly Recruiting Depot' was opened in Nellore as an experimental measure. It worked for three months but the results were so unsatisfactory that the project was abandoned. The depot recruited during this time 15 coolies at a cost of Rs. 226-14-0.

62. After all is said and done, one has to recognise that the work is an unpleasant one and that, with gradual spread of education and elevation of the depressed classes, manual labour, for such unpleasant task as scavenging, will eventually become even more scarce than at present. Of course it would be monstrous to think of perpetuating present conditions lest conservancy work might suffer. Education and elevation of the depressed classes must go on, however unfavourably it may affect recruitment of the scavenger cooly. However, with an improved water-supply, especially in quantity, it may be expected



Motor Lorry being loaded with rubbish.



A pond covered with Water Hyacinth that is being filled up by burnt rubbish and incinerator ash.



A pond being filled by burnt rubbish from small incinerator.

that the water-carriage-system of night-soil disposal will do away with much of our troubles.

63. With regard to the disposal of rubbish a large portion is incinerated at two big incinerators, one each in the north and south and by means of a number of small incinerators scattered about the town. The latter are specially meant to reclaim and render profitable such lands as marshy waste, breeding mosquitoes or other dangerous insect life. The portion not so incinerated is dumped directly at some convenient centre at a safe distance from human dwellings and the rubbish so dumped is covered with earth and rendered free from all danger.

64. Night-soil is trenched at two places, but that from five or six divisions in the south range is flushed into the main sewers at the Krishnampet Pail depot. Trenching has become very offensive in Purasawakkam, but can only be put an end to as soon as another pail depot is put up at Lang's Garden Sewage Pumping Station.

65. The general introduction of flush-out latrines would do away with bad scavenging and there is no doubt that it must be introduced sooner or later. Why not introduce it sooner than later? Of course, not much reform in this direction could be effected till the drainage and water-supply schemes are completed. Since it is inevitable that, as days go by, hand labour has to be replaced, the sooner we prepare for this contingency, the better. Meanwhile there is perhaps only one way of getting the coolies to do better work and that is, by increasing their pay, although it is possible that every response to clamour for increased pay may be followed by even more clamourous and perhaps unreasonable demands.

Sanitation.

66. Before making my observations, I detail below the work of the Sanitary Inspector as detailed in the Code:—

(a) The prevention of infectious and contagious diseases of men and animals and taking steps to check their spread (Sections 364, 366 and 367 and the President's order, dated 27th January 1909);

(b) the inspection of private buildings with a view to enforce the provisions of the Act regarding the sanitary condition of the latrines, urinals, drains, &c., attached to such buildings and in regard to overcrowding of dwelling-houses (Sections 224, 225 and 310);

(c) the inspection of premises in connection with building applications to see that the sanitary regulations are satisfied (Sections 264, 265 and Schedule XI);

(d) the inspection of places where offensive and dangerous trades are carried on and of such places as cattle-yards, bake-houses, lodging houses and the like with a view to see that the terms under which these places are licensed are fulfilled and that the by-laws relating to them are obeyed (Sections 315, 316, 322 and 323);

(e) the inspection of abandoned places, unwholesome and insanitary lands and buildings, tanks, wells, &c., which are likely to cause danger to the public health with a view to abate or remove such danger (Sections 305 to 309);

(f) the inspection of places where congestion has been removed to prevent encroachments;

(g) the inspection of articles of food and drink offered for sale to the public with a view to prevent the sale of unwholesome articles (Sections 352 to 361);

(h) the control over slaughterhouses and public markets (Sections 340, 342, 346 and 347);

(i) supervision and control of burning and burial grounds;

(j) and carrying out generally the provisions of the Act and the by-laws regarding sanitary conditions.

67. There are 20 Sanitary Inspectors assisted by one Process Server and one peon each. The population according to the Census of 1911 is 5,18,660, *i.e.*, there is one Sanitary Inspector for every 25,433 of the population and taken in the proportion of inhabited houses, one Sanitary Inspector for every 2,980 houses. In popular opinion, the Sanitary Inspector is a person always dreaded and notorious for setting up troubles. This statement is not wholly untrue. The fault, I submit, is not so much in him as it is in the system.

Firstly, the number of Sanitary Inspectors is, in my opinion, too small.

Secondly, the Sanitary Inspector's work is of a multifarious nature. He is the most important municipal authority in his range or division, and he is vested with a lot of power. He has to guide many an incoming officer. He is to help other departments in the discharge of duties assigned to the latter. Instances of this kind are not rare. The License Superintendent looks to him to advise him on matters for granting licenses, and after the license is granted it is for the Sanitary Inspector to observe that the conditions of the licenses are carried out. Defaulters must be reported, and prosecutions under this department are initiated by him. In fact, he acts as Chief Prosecuting Inspector to assist the Vakil in the conduct of a case. It is not rare for him to be called upon to assist the Bill Collector or Assessor of the Revenue Department in the discharge of their work and in his duties he has often to come into contact with the sub-staff of the Works Department. He has to assist the Malaria Department. Thus, to a conscientious worker, the duties assigned are arduous, and it is not possible invariably to expect satisfactory work. Added to all this is the want of sufficient powers in the Act to deal with certain known evils. An example of this has been already given in the matter of food and drugs.

68. This is considered as a very valuable part of the Sanitary Inspector's **House Inspection**. duty and is intended to prevent overcrowding and living in dark, ill-ventilated apartments. I have often seen the diaries regarding this maintained by these people and felt greatly disappointed. A Sanitary Inspector may inspect from five to six houses in a day on an average and note down the defects. A notice is issued on the owner under Section 308 of the Act and before any improvement is effected either by persuasion or prosecution it will be over six months and

in some cases two years. Even if hurried up all that can be done is to obtain a conviction and transfer the papers to the Engineer to do the repairs under costs recoverable. The Engineer has to get estimates, and call in a contractor who, in his turn, takes his own time. All this necessitates long periods of delay which appear unavoidable in both methods of working. The result is that there will be a large accumulation of papers pending on the file of each Sanitary Inspector.

69. Recently the procedure adopted to mend matters is as follows :—

A man who offends under Section 308 is prosecuted on two or three repeated occasions to bring sufficient pressure on him to repair the house in question. The prosecution resulting in a fine of four annas to one Rupee has little or no effect. If in spite of this he is recalcitrant, action is taken under Section 309 declaring the house unfit for human habitation. This last measure appears to have a wholesome effect inasmuch as the owner promptly puts his house in order instead of vacating the house.

70. The Sanitary Inspector's duty in this connection is of great importance; **Infectious diseases.** on him rests the responsibility of notifying the occurrence of infectious diseases in houses and of taking such measures as isolation, disinfection, re-vaccination, etc., to check the spread of such diseases. But this is rarely possible :—

Firstly.—The municipal authorities come to know of the occurrence of such diseases either by chance or after the death of the patient.

Secondly.—It is not obligatory upon the parent or relative of such a person to make a report on these diseases.

Thirdly.—Medical practitioners who have to report such cases to the Health Officer under Section 363 do not always do so; and very often being called in either before the diagnostic symptoms of the disease have manifested themselves, or just a few minutes or hours before death, they are not in a position to diagnose the nature of the case they may have observed.

Fourthly.—The fear that the public have as to the trouble and annoyances they think they would be subjected to, if such cases are reported.

Fifthly.—The careless way in which the Sanitary Inspector too often performs his own work.

71. Then again the powers under the Act with regard to the handling of dangerous diseases are very meagre. During the epidemic of smallpox, a good deal of difficulty was experienced in the matter of isolation of patients. The power given by the Act is "to remove by an order." According to this, a notice is served to remove the patient to the Isolation Hospital within so many, say 24 hours. If the patient is not removed, all that can be done is to prosecute the guardian or relative who may be fined. But the focus of infection remains where it was and spreads. No executive powers appear to have been contemplated under the above Section. Another matter that demands great and even urgent attention is the provision of a suitable Isolation

Hospital. At present there are two places set apart as Isolation Hospitals : but the popular opinion seems to be that they are far from satisfactory as hospitals.

72. Moreover the number of beds available at present is far too small to satisfy the needs of a big City like Madras. And it may be admitted that under present arrangements, decent and respectable people cannot be given any comforts, nor can any caste or class prejudices be possibly respected. Hence it goes without saying that the hospitals are extremely unpopular, especially among the middle classes and the well-to-do. If then, a person suffers from an infectious disease and arrangements for segregation cannot be made in his own house, we are put to the cruel necessity of forcing him into a hospital none too well equipped.

73. A recent improvement is the conversion of the Old Barracks in Jail Street into a hospital. Still it is high time that a decent Isolation Hospital were constructed not too far from the City. A lakh or two spent on this would be money well spent.

74. As already pointed out, the present Rules of Law are inadequate. In **Laws for Prevention of Infectious Diseases.** England, the notifiable diseases are Small-pox, Croup, Enteric, Typhus, Cholera, Scarlet fever, Diphtheria, Erysipilis, Measles, Relapsing fever, Puerperal fever, and Phthisis, for which a fee of 2s. 6d. is paid for every notification by the Medical Practitioner and 1s. 6d for every case occurring in a hospital. The Public Health Act, 1875, also provides for the provision of hospital accommodation for infectious diseases. In Bombay, the following diseases are notifiable:—Small-pox, Plague, Cholera, Relapsing fever, Enteric, Diphtheria and Tuberculosis. We in Madras are still far behind even Bombay, only four diseases, *viz.*, Small-pox, Enteric, Cholera and Plague being notifiable. Under these circumstances, it is a matter of great concern to the Sanitary authorities how to combat an epidemic of any of these diseases. In a City where Cholera is practically endemic and an epidemic is feared every year, it is very desirable that greater powers be given to the Corporation executive in the matter of controlling the water the people drink. The following additions to the powers now vested in the Corporation are in adaptation of the Bombay Act and are submitted for the consideration of the Corporation and Government.

(1) If it shall appear to the President that the water in any well, tank or other place is likely, if used for drinking, to engender or cause the spread of any dangerous disease, he may, by public notice, prohibit the removal or use of the said water for the purpose of drinking.

(2) No person shall remove or use for the purpose of drinking any water in respect of which any such public notice has been issued.

(3) The President or any Police Officer, empowered by him in this behalf, may, on a certificate signed by the Health Officer, direct, or cause the removal of, a person suffering from any notifiable disease to an Infectious Disease Hospital.

75. In spite of the efforts of the Health Department to get all the children vaccinated and to protect the City from small-pox, epidemics of the disease, though on a much smaller scale, are not uncommon and the disease may be considered endemic, developing into epidemics under favourable conditions. The causes of such epidemics may be stated as follows :—

(1) A certain number of births escape registration, and possibly these children are not vaccinated.

(2) A small number of children, reported to have been removed from the station permanently or temporarily, may escape the observation of the Vaccination Department and thus remain unprotected.

(3) Vaccination does not give a life-long immunity. Revaccination in later periods of life is not made compulsory.

(4) Wrong information or want of proper information of the child's whereabouts.

76. (1) If successful, it protects the individual against small-pox for a period which cannot be determined definitely for the individual but which averages from five to seven years.

(2) A second vaccination or revaccination renews the protection.

(3) Immunity against small-pox for life is usually conferred on persons successfully vaccinated on two occasions.

(4) Vaccination and revaccination systematically and generally carried out, confer complete protection to a community or a nation.

(5) A person vaccinated once and contracting small-pox at a later time has the disease, as a rule, in a less serious form than the unvaccinated person. The severity of the disease is in inverse proportion to the period of time elapsing between the vaccination and the attack of small-pox.

(6) The more typical and perfect the results of vaccination, the greater the beneficial effects.

(7) (*And lastly*). The idea of being protected against small-pox has a very beneficial effect on the mind or mental state of a man especially in times of epidemic.

77. The question whether persons exposed to small-pox should be vaccinated, is often asked. The following is a summary of the effects of vaccination during the incubation period of small-pox—the incubation period being taken as 14 days.

(1) Vaccination done at the beginning of the period of incubation, so that the vaccine eruption is well developed before the onset of the actual disease, will prevent or abort small-pox.

(2) If it is done about the sixth or eighth day of the incubation period (middle period), the vaccination takes and may modify the severity of the small-pox.

(3) If done during a later period (last stage) of incubation, the two infections run their course without influencing each other. The progress of the case depends upon the type of the original disease affecting the individual.

(4) Vaccination performed during the primary fever of small-pox or just before (pre-eruption stage) has no influence on the disease, and the vaccination does not take.

The following diagram taken from an American text-book illustrates the above very well.

On the first day	Early in the incubation period; 2nd to 6th days.	Middle of the incubation period; 6th to 8th days.	Towards the end of the incubation period; 9th to 14th days.	During the primary fever or pre-eruption stage.	Variola.
... Prevent small-pox.	... Small-pox is aborted.	... Varioloid or mild case.	... Small-pox not influenced.	... Small-pox not influenced.	
1	2 3 4 5 6	7 8	9 10 11 12 13 14	1 2 3	
			Period of incubation of small-pox, in days—		Primary fever, Eruption.
Vaccination takes.	Vaccination takes.	Vaccination takes 2 or 4 days before primary fever.	Vaccination takes and both affections run side by side.	Vaccination does not take.	Vaccinia.

78. As it is not possible to say what stage in the period of incubation a given case is in, it is always advisable to vaccinate exposed persons. Even if it is too late, little harm will be done. The vaccine eruption is added to the small-pox and being mild has no influence upon the course of small-pox.

79. Vaccination protects not only against small-pox but also against vaccinia, and curiously enough more against small-pox than against itself. No definite time can be fixed for the duration of the immunity which in course of time wears off as in other infectious diseases. Small-pox itself does not always protect against itself. There have been instances recently of recurrence of the disease in those who had already suffered once before. In one case in this City there have been three attacks of small-pox. On an average, the immunity may be taken to last for a period of seven years.

80. The knowledge of the above fact makes it incumbent to practise Revaccination. revaccination to afford a continuous protection. The period that should elapse between a primary vaccination and a revaccination has been elaborately discussed but no definite laws could be

laid down. Ten years is too long a period, probably, to depend upon in individual cases. The five years' interval of Japan is good but may be too short. The best time to vaccinate is in the first year and again at from 10 to 13 years.

81. It is a fallacy to state that, if a revaccination takes, the subject was therefore susceptible. It is a greater fallacy to state that if a vaccination fails, the subject is therefore immune. This view may result in real harm. It is this uncertainty that makes it essential to revaccinate at once all those exposed directly or indirectly to small-pox. There is no prophylactic measure so easy and handy in dealing with an epidemic of small-pox. But in the present state of affairs, it appears too premature to think of making revaccination compulsory. The anti-vaccinationist movement seems to be spreading and the "Conscience clause" in England raises the question of having something alike in this country.

82. In the pre-vaccination days small-pox was formerly a disease of children.

Prevalence of Small-pox. It was called in Germany "Kinderblattern." Since vaccination protects the child, small-pox has now become more prevalent among adults ; and it is a matter of common knowledge that, in times of epidemics, it is the adults who are attacked with small-pox and attacked in a severe form too.

83. Small-pox is a disease which shows complete independence of conditions such as race, climate, soil, age, sex, occupation, sanitary surroundings, &c. It thrives wherever the contagion is carried and wherever it finds susceptible people. The epidemiology of small-pox bears but a small relation to improved sanitation which has marked influence in diminishing such diseases as Tuberculosis, Enteric and Cholera. But in slums reeking in filth, any disease once introduced takes a firm hold. Small-pox attacks all, high or low, the rich or poor.

84. In studying statistics dealing with this we should not look merely at the figures giving numbers of attacks in the vaccinated and the unvaccinated. The good effects of vaccination are readable in the pronounced difference in the mortality from small-pox in the vaccinated and the unvaccinated.

Small-pox in the vaccinated and unvaccinated. Schambey says that the death-rate from small-pox has been from 5 to 16 times greater among the unvaccinated than among the vaccinated. For instance, in the City of Madras there were in the year 1915, 187 attacks in the vaccinated and only 102 in the unvaccinated. But the mortality rate was 13.4 *per cent.* in the former and 41.2 *per cent.* in the latter. Taking by age periods, in children up to 12 years, there were 80 attacks and 13 deaths among the vaccinated, and 70 attacks and 36 deaths among the unvaccinated ; that is 16.25 *per cent.* and 51.4 *per cent.* respectively.

86. Fortunately, the City of Madras continues to be immune from plague, and not much interest is therefore evinced on this aspect of public health. But in the light of past experience one cannot be dogmatic on the absolute immunity of the City to plague. Rangoon was free from plague up to 1905 and Ceylon was classed as immune till 1914.

Travancore, notwithstanding its elevation and its free communication by land with the infected Malabar and Coimbatore Districts, still remains free from plague.

87. Between January 1905 and June 1906 there were as many as 103 indigenous cases of plague in the City. These all occurred in some of the fishing-hamlets or **Kuppams** on the northern end of the town, and, consequent on prompt steps being taken, the infection was not allowed to enter into the other and more crowded parts of the town. Since June 1906 no indigenous cases have occurred. Imported cases are reported now and again, but fortunately they have not proved to be centres for the spread of infection.

88. The first line of defence against plague is the formation of a system by which it is possible to trace movements of persons from infected foreign territory as well as from within a territory, guarded, if it became infected. This system is the "Passport System." This has undergone a slight modification in what is called "Plague Notification," and the traveller is bound to notify his arrival from an infected area and report any case of suspicious sickness or rat-fall in the house within one month of his arrival. This new system is in operation since June 1914, and it is premature to offer criticisms upon the new and old systems. It remains to be seen whether the new system can secure equally prompt intelligence. Suffice to say that under the new system there appear to be greater chances for the traveller to evade the rules.

89. The second line of defence is the destruction of rats. The rat as a "conveyer of disease" and its killing as a "precautionary measure" were officially recognised as far back as September 1896 and November 1896 on deductions from reports as to the disease in Gharwal and Hongkong respectively.

90. In Madras, rats are destroyed by trapping, and with a small establishment, 133,970 rats were killed during 1915. The cost works out to $8\frac{1}{2}$ pies for each rat. In relation to the area and population of Madras and the fecundity of rats, this number, I submit, is negligible. A pair of rats are known from laboratory experiments to produce 880 rats *per annum*.

91. Sanitation, properly applied, influences the spread of any infectious disease. "Sanitation is the result of bacteriological, clinical, and epidemiological investigation into the cause of disease and embraces the whole of practical preventive medicine, as well as, the every-day work of practical sanitation." Insanitary surroundings are not the sole causes for disease and mortality, but the insanitary condition of the people due in most cases to poverty and ignorance is responsible for the continued maintenance of sickness and high death-rates. "Sanitation includes not only the provision of sanitary houses and streets and proper methods of drainage and water-supply, but everything which tends to improve public health and to prevent the spread of disease including investigation into the causes of sickness and death, the provision of hospitals, medical relief, health visitors, and instruction in personal hygiene and the spread of knowledge of the causes of disease."

92. It will be seen that, so far as the conditions of health (or rather the want of health) can be read from the returns of vital statistics, the year under review is the healthiest or least unhealthy (whichever way one may like to put it) for the last ten years. But let there be no mistake or false sense of security about it. The results are mostly due to natural causes or to "good luck." The year has followed a series of years when death-rate was even higher than usual ; kind nature will not go on continuously at this rate ; she stops now and again perhaps to inspect our work, and we are now in one of the comparatively good years, which often follows a number of bad years. As was pointed out in para. 5 above, the death-rate of this City for the last few years shows a sort of curious periodicity in which, the 1st, 4th, 7th and 10th years show a high death-rate and the intervening years show a decided decline in the same. It cannot for a moment be imagined that the sanitary conditions of our City have undergone any radical improvement. It is quite true that something has been done—much remains yet to be done—particularly in the matter of water-supply, conservancy and malaria. The City could be and certainly ought to be kept much cleaner than at present. Our drainage system has yet to be completed ; our water distribution arrangements have yet to be improved ; the problem of housing arrangements especially for the poor—yet remains unsolved. Infantile mortality is still appallingly high ; the milk-supply (or rather the want of supply) is a standing scandal. Small-pox, Cholera and such other preventable diseases are still amongst us, as also the cruel disease Malaria, which slowly but surely saps the very life-blood of our citizens. Medical inspection of school children is only commencing. Consumption is threatening ; and we have yet to make proper provision for suitable Isolation Hospitals and Tuberculosis Dispensaries. How little then has actually been done, as compared with how much more yet remains to be done !

93. It is a truism to say that no programme of sanitation will succeed unless the citizen intelligently co-operates with the Corporation in making the scheme a success. I say 'intelligently' advisedly ; for, no system of forced co-operation kept up by a series of never-ending notices and prosecutions and such like measures can ever be of real or lasting value. The chief cause of lack of such 'intelligent co-operation' is undoubtedly want of the sanitary conscience for the formation of which education of the Public in Hygiene is absolutely necessary. Almost every evil we are now suffering from can be directly or indirectly traced to this primary fault. It is not merely the masses that require to be educated and have their sanitary consciences awakened ; the Corporation, I venture to submit, stands as much in need of education as the masses. Let us then begin with self-education ; at the risk of repeating time-worn truisms and vague platitudes, I beg to state that we, the servants of the Corporation, have yet to realise that we are but the servants and not masters of the public ; the Nabobism that is often our most provoking feature ought to go ; the Madras citizen is like the citizen everywhere else and can often be persuaded by tact and gentleness. Be firm and resolute by all means ; but do not provoke a citizen by any show of ' Bahadurism.' In a number of cases unreasonable opposition there will be, and it is often due to ignorance, which so far as our

masses are concerned, is more often their misfortune than their fault. It is this ignorance that is at the root of many of our sanitary failures ; apart from the fact that ignorance breeds poverty which in turn leads to insanitary conditions, there is the more direct relationship between ignorance and sanitation that the uneducated and the ignorant citizen not only does not see and realise that all sanitary measures are primarily for his benefit, but on the contrary, he will actually discover covert or veiled acts of harassment and nuisance in each and every move of the sanitary authorities. The best way of awakening the sanitary conscience of our masses is by education and that of the right sort. Simple and ideal rules of sanitation are found in plenty in ancient Sanskrit and Vernacular Works ; and there is no better way of reaching the heart of our masses than through the medium of their spoken tongue and the authority of ancient texts. The curriculum of every primary school should include instruction by competent teachers in these elementary rules of sanitation, culled from ancient texts and adapted to suit modern conditions. From what is known of the wonderful effect on young minds of religious texts and songs when taught by competent instructors, one can easily imagine what immense hold a similar instruction in elements of sanitation will have on our future citizens and parents. Education of the masses must also be in the vernaculars and supported by the authority of the ancient texts wherever possible. It is impossible to overestimate the role which Social Service Leagues and Voluntary Aid Societies can play in this direction .

94. At our present stage, it is perhaps unthinkable to permit only licensed midwives to practise ; the barber-midwife cannot go and perhaps must not go under the present conditions. What is very desirable is to improve the barber-midwife to the level of a 'First Aid midwife'—if one may use such a term—these should be encouraged to attend our big Maternity Hospitals, and arrangements should be made there to give them demonstration and simple instructions in vernacular. If necessary, they may be encouraged by the institution of a system of small scholarships. Much will have been done, if they understand the gospel of asepsis and avoid meddlesome midwifery. In fact, their role should be more or less the same as that of our passed 'First aid' to do all that can profitably be done before the help of a competent doctor is procured. Nothing more and nothing less.

95. It is a foregone conclusion that if sanitation were correctly appreciated, the average inhabitants of the tropics would demand better hygienic conditions of their environments. Education of the masses must be on a more liberal scale ; the child of the future generation must be taught the three R's and an appreciation of hygiene will necessarily follow. Dr. E. S. Tyak advocates " school instruction as the leading factor", the required instruction in elementary principles of hygiene being combined with illustrative talk on school ventilation, fresh air, cleanliness, diet, infection, oral hygiene, wholesome food, personal methods of "eating, sleeping, and exercising, and such essentials of hygiene." Speaking presumably of Christian communities, he thinks that the Churches afford an excellent medium for demonstration of the principles of health showing that "disease is not a necessary evil sent by a destroying God." This applies with as much force to every other religion.

96. The influence of women of the community when "organised especially for Medical Social Service" and "the potent agency of the Press" are matters of which cognisance should be taken. In attempting the elementary education of the masses, it is fatal to neglect the education of their women folk. As long as the women remain ignorant of the principles of hygiene and a sound body and mind, so long will the attempts at disease-prevention fail in the home—a home where the influence of general education should naturally make itself felt through the women. This is peculiarly the case in India where the educated man understands and talks much of hygiene but is practically helpless within his own household.

ADMINISTRATION OF PUBLIC HEALTH—DETAIL—1915.

97. For purposes of administration, the City is divided into two ranges, North and South. The ranges are subdivided into Municipal Divisions so that the 1st to 9th Divisions constitute the North Range, and 10th to 20th, South Range. The North Range is comparatively smaller in area but most thickly populated, whereas the South Range is extensive in area with varying density of population,—divisions 14 and 15 (Nungambakkam and Kilpauk) having the lowest density (13 and 8 *per* acre respectively) and the 18th Division (Triplicane) the highest density (71 *per* acre).

98. Each division is in immediate charge of a Sanitary Inspector responsible for the sanitary work of his ward, whereas the conservancy work is in charge of an Overseer for each division. Till 4th August 1915 two Assistant Health Officers, were in full charge of Sanitation and Conservancy of their respective ranges and a Third Assistant Health Officer was in charge of Vaccination, Vital Statistics (Burial and Burning Grounds) and Plague Sections.

99. The indoor departmental work is being carried on under the following five sections:—

(1) Sanitation ; (2) Conservancy ; (3) Vital Statistics ; (4) Vaccination ; and (5) Plague.

100. From 4th August 1915, Dr. Singaravelu, the Senior Assistant Health Officer was placed in sole charge of the Conservancy Section, assisted by one Conservancy Supervisor and twenty Conservancy Overseers, and Duffadars and peons. Thus Dr. Raman Pillai and Dr. Isaac, the Second and Third Assistant Health Officers respectively, were relieved of this work and were placed to supervise the work of the other sections belonging to their respective ranges.

101. The indoor office staff remains the same and would require a passing note. The organisation of the office looks peculiar and for more efficient work requires, in my opinion, remodelling. There is a Head Clerk for Sanitation and Conservancy each, while for Vaccination, Plague and Vital Statistics Sections there is a first clerk, one or two assistant clerks. The result is that there is not one individual in the capacity of a Superintendent or Office Manager who can be held responsible for the general working of the department in whole or of the several sections. The Head Clerk of the Sanitary Section has no hand in Vaccination and Vital Statistics Sections, although he appears to have something to do with the Plague Section. It is often felt that in eliciting any information or calling in for a paper, all the Section Clerks may have to be asked for before the information required is obtained. The result is that papers are often mislaid and secured after great search and delay to the annoyance of the officers concerned.

102. The office must be worked on a better system. It appears desirable that the Sanitary and Conservancy Sections must be kept independent of each other, especially under the present system of one Assistant Health Officer

being in sole charge. The other three sections, *viz.*, Vaccination, Plague, and Vital Statistics may be merged into the Sanitary Section and a Head Clerk or a Superintendent appointed to be all responsible for the working of these different sections of the Health Department. The required number of Clerks may be appointed to work directly under the Head Clerk or Superintendent, the whole office being under the control and supervision of the Health Officer. Towards this end a proposal to remodel the office was submitted in December 1915 but for want of funds and the difficulty of finding other berths for the present ill-paid, inefficient but permanent clerks, the proposal was allowed to lie over. The proposals suggested are as follows :—

Existing.

Sanitation—

Rs.

One Head Clerk on	... 80-2-100 (A)
One Correspondence and Disposal Clerk	... 35-1-40 (B)
One Assistant Disposal Clerk	... 25-1-30 (B)
One Accountant	... 40-1-45 (B)
One Appropriation and Service Book Clerk	... 20-1-25 (B)
One Stationery, etc., Clerk	... 20-1-25 (B)
One Notice and Prosecution Register Clerk	... 20
One Registering Clerk	... 20
One Despatching Clerk	... 20
One Typist	... 25-1-35 (A)

Proposed.

Rs.

One Head Clerk or Superintendent	... 100-2 $\frac{1}{2}$ -125 (A)
One General Correspondence and Disposal Clerk	... 50-1-60 (A)
One Assistant Correspondence Clerk	... 40-1-45 (B)
One Assistant Correspondence Clerk	... 35-1-40 (B)
One Accountant	... 40-2-60 (A)
One Appropriation and Stationery Clerk	... 25-1-35 (A)
One Registering Clerk	... 20-1-25 (B)
One Despatching and Miscellaneous Clerk	... 20-1-25 (B)
One Typist	... 25-1-35 (A)

Vaccination—

One Head Clerk	... 30-1-40 (A)
One Clerk	... 20-1-25 (A)

Present.

Vital Statistics Section—

Rs.

One Head Clerk	... 40-1-50 (A)
One Statistical Clerk	... 25-1-30 (B)
One Registration of Births and Deaths Clerk	... 20-1-25 (B)
One Correspondence Clerk.	20-0-0

Proposed.

Rs.

One Head Clerk	... 50-2-70 (A)
One Vital Statistical Clerk	... 30-1-40 (A)
One Correspondence Clerk	... 25-1-35 (A)
One Registering & Despatching Clerk	... 20-1-25 (B)

Conservancy Section to remain as before.

A=Annual; B=Biennial.

103. The following constitute the outdoor staff :—

For Sanitation—20 Sanitary Inspectors with one Process Server and one peon each. There are two Food Inspectors for inspection of food and drugs but in the absence of a laboratory not much can be expected from them.

For Conservancy—20 Conservancy Overseers with three to seven sectional peons each.

Under Vaccination there are ten Medical Vaccinators, all Sub-Assistant Surgeons, each assisted by one Assistant Vaccinator and peon. There is one permanent Female Vaccinator and a second was entertained as a temporary measure from 1st October 1915.

For the Registration of Births and Deaths, under Vital Statistics Section, there are ten Medical Registrars, all Sub-Assistant Surgeons, each assisted by two Conicopillais.

In the Plague Section, for the observance and tracing of the Plague Notification holders, there are ten Plague Inspectors and six Plague Nurses with a peon for each.

The rat-destruction office is under the supervision of Dr. C. Krishna Reddi, B.A., M.B. and C.M., the Special Plague Medical Officer, assisted by two Assistants, 22 rat-catchers, and a Maistri.

The Municipal Dhobikhana in Chetput is under the supervision of the Sanitary Inspector, 14th Division, assisted by a Supervisor and a peon.

For the supply of carts and bullocks for conservancy work of the City, there are eight bullock depots, each in charge of a Depot Superintendent. There is a Chief Superintendent, Mr. Shannon, over all these under the direct control of the Health Officer.

Mr. Shedwell is the Superintendent of Municipal Slaughterhouses (sheep, cattle and pigs).

The Corporation own two markets each under a Superintendent, the Moore Market and Smithfield Market.

With regard to medical aid, the Corporation maintain the Royapettah Hospital and three dispensaries, *viz.*, the Washermanpet, the Baliah Naidu, and Chintadripet. The Surgeon, Fourth District, Madras, is the Superintendent of the Royapettah Hospital, and the three dispensaries mentioned above, each presided over by a Sub-Assistant Surgeon, are under the direct supervision of the Surgeons of the respective districts of Madras.

The Rajah Sir Ramaswamy Mudaliyar's Lying-in-Hospital is the one Lying-in-Hospital maintained by the Corporation under the superintendence of Surgeon, First District.

There are two infectious diseases hospitals one in the north (Native Infirmary) under the Surgeon, First District; and the other in the south (Krishnampet) under the Surgeon, Fourth District. The Health Officer has no hand in their

working except in the matter of passing bills, indents, etc., and offering any advice required by the President.

104. Grant of licenses for offensive trades, etc., is in the License Department with a Superintendent under the control of the President.

105. Dr. W. R. Macdonald, M.B., CH.B., D.HY., D.PH., having resigned, handed over charge of the office to Dr. K. Raghavendra Rao, B.A., M.B. and C.M., Special Malaria Officer, on 21st September 1915. Thus from 22nd September 1915, Dr. K. Raghavendra Rao was in charge of both the Health and Malaria Departments.

VITAL STATISTICS.

Area of the City	... 27.6 sq. miles or 17,664 acres.
Census population of 1911	... 5,18,660
Average density	... 29.4 <i>per acre.</i>
Density of the 7th, 8th and 9th Divisions	... 132.6 <i>per acre.</i>
Density of the 14th and 15th Divisions	... 10.1 <i>per acre.</i>
Inhabited houses	... 59,595.
Number of persons per house	... 8.6
Births	... 18,981 (including still-births) against 18,847 in 1914.
Deaths	... 18,688 against 24,174 in 1914.
Infantile mortality	... 286.1 deaths <i>per 1,000</i> infants born alive in the year against 308.9 in 1914.
Estimated population for the middle of the year 1915	... 5,22,617.

106. The Vital Statistics Section continued to be under the direct supervision of Dr. Raman Pillai, 2nd Assistant Health Officer, until 4th August 1915, when, consequent on the arrangement whereby Dr. Singaravelu, 1st Assistant Health Officer, was placed in sole charge of Conservancy, the two ranges, South and North of the City, were left under Dr. Raman Pillai and Dr. Isaac, the 2nd and 3rd Assistant Health Officers respectively, who were to be in charge of all the work of their ranges except Conservancy, *viz.*, Sanitary, Plague, Vaccination and Vital Statistics.

Registration of Births and Deaths.

107. Ten Medical Registrars were in charge of registration of births and deaths. The number of conicopillais employed for discovering births was 20, as in the previous year, and they were placed under the direct control of the Medical Registrars of the respective divisions. These conicopillais discovered births by house to house enquiry in their divisions in addition to enquiries made of midwives. The causes of deaths reported to the Medical Registrars were as usual too vague to enable them to arrive at an accurate diagnosis, and they were therefore directed to verify as far as possible all cases of deaths which occurred in their divisions except those reported from the hospitals. In addition, circulars were issued to Medical Practitioners in Madras to comply with the requirements of section 382 of the Act. It is a matter for regret that not much assistance is found in this direction. The percentage of deaths reported by Medical Practitioners is 11.6 ; out of the total, only 2.6 *per cent.* being from private medical men and 9.0 *per cent.* from hospitals.

Births.

108. The number of births registered during the year 1915, exclusive of the still-born was 18,331, being 90 births more than in the previous year. The ratio calculated on the Census population of 1911 was 35.3 *per mille per annum* against 35.2 of the previous year. The mean ratio of births for the previous five

years was 37.4. The birth ratio calculated on the estimated population was 35.1.

Corrected birth-rate. During 1915, 6,910 children not registered in Madras (moffusal births) under one year of age were primarily vaccinated in Madras, but a large number must have escaped vaccination either by death, or postponement, or change of residence. 15,341 children under one year were primarily vaccinated during the year under review, and this works out to 83.7 *per cent.* of the births registered. It may be assumed that 83.7 *per cent.* of the unregistered children also were vaccinated, the balance of 16.3 *per cent.* having escaped vaccination for the reasons stated above. Thus the infant population during the year under report works out as follows:—

Number of births registered ...	...	...	18,331
Number of births unregistered (of children primarily vaccinated in Madras) ...	...	...	6,910
Number of births unregistered and which escaped vaccination ...	...	...	1,136
Total number of births ...	...	...	<u>26,377,</u>

giving a birth-rate of 50.9 *per 1,000* of population which for a City like Madras may be considered as fairly high and one much higher than that of other provincial cities.

TABLE A.

Table of Births and Birth-rates during 1910-15.

Years.	Population.	No. of Births registered.	Birth-rate <i>per 1,000</i> of population.
1910 ...	509,346	19,340	37.9
1911 ...		19,735	38.3
1912 ...		20,099	38.8
1913 ...	518,660	19,470	37.5
1914 ...		18,241	35.2
1915 ...		18,331	35.3

109. Table A shows the total births with rates *per mille* for the last six years. The birth ratio is the lowest for the last twelve years. Compared with the birth-rates of Bombay, Calcutta and Rangoon, that of Madras is favourable. But the very marked difference requires a kind of explanation. The social custom with regard to early marriages and child-bearing in South India appears to have some bearing.

"The census of 1911 gives the number of potential mothers, *i.e.*, women between the ages of 15 and 45 years as 129,803. The percentage of child-bearing women between these ages to the total female population is 51.5 while in England it is 46 and the birth-rate *per cent.* of females between 15 and 45 years is 14.9 as

compared with 10.5 in England and 14.3 in Bombay." With 18,331 births in 1915, the birth-rate calculated *per 1,000* of the female population between the ages of 15 and 45 years is 141.2 against 140.5 in 1914 and 149.9 in 1913.

TABLE B.

Table of Birth-rates for the different races of the City for 1914 and 1915.

Race or Caste.	Population by the census of 1911.	Birth-rate for 1914.	Birth-rate for 1915.
Europeans	4,187	18.2	20.1
Anglo-Indians	10,332	38.2	34.4
Indian Christians	27,293	30.1	35.2
Hindus	415,910	35.3	35.5
Muhammadans	59,169	38.7	36.5
Others	1,769	1.1	0.6
Total ...	518,660	35.2	35.3

110. Table B shows the birth-rates for the different races as in previous years. The Muhammadan Community has the highest birth-rate of 36.5 *per mille* and the European the lowest of 20.1. Compared with 1914, the European and Indian Christian Communities have shown great improvement whereas there is a slight fall in the Muhammadan. The ratio in the Hindu is steady.

TABLE C.

Births by months during the years 1913, 1914 and 1915.

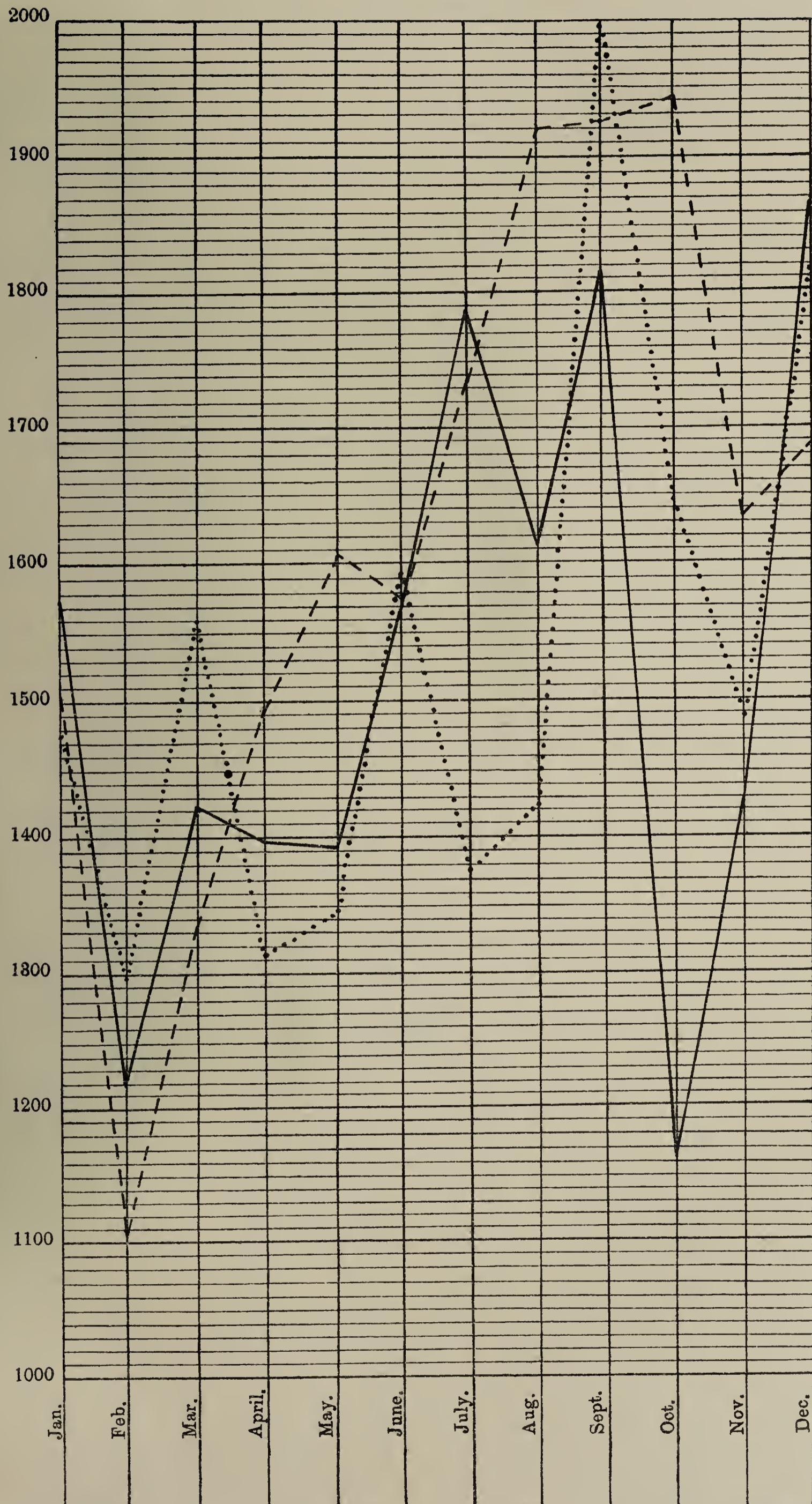
Months.	No. of Births registered in 1913.	No. of Births registered in 1914.	No. of Births registered in 1915.
January	1,507	1,574	1,477
February	1,107	1,220	1,298
March	1,334	1,424	1,558
April	1,492	1,398	1,315
May	1,605	13,92	1,344
June	1,577	1,565	1,593
July	1,737	1,788	1,376
August	1,920	1,611	1,423
September	1,925	1,813	1,997
October	1,941	1,163	1,648
November	1,636	1,425	1,489
December	1,689	1,868	1,813
Total ...	19,470	18,241	18,331

**Graph Showing
Births by months during the years**

— 1913.

— 1914.

.... 1915.



111. The monthly incidence of birth is shown in Table C, and graphically for years 1913, 1914 and 1915. The largest number of births were recorded in September and next in December and October. As a general rule, the winter months appear to be more productive than other seasons of the year. It is noteworthy that these are the very months when there is greater sickness in Madras, and a large number of deaths is recorded, than in other parts of the year.

112. The diagram facing page 10 shows the birth-rate by divisions. The first division shows the highest birth-rate, the next being in the 13th Division. From Divisions 3 to 9 very low birth-rates are recorded. Comparison of birth-rates by divisions is of no great value. All the divisions of the City may be said to possess a regular mixture of different classes living under entirely different conditions.

113. 951 illegitimate births were registered during the year against 818 in the previous year or 5.2 *per cent.* of the total as against 4.5 *per cent.* for 1914. This is as registered and may not at first sight be taken as of much consequence in the interest of public health. But its effects over infantile mortality cannot be overlooked. Dr. W. H. Fretz says : "The importance of illegitimacy as a calamity and its effect on infantile mortality is evident. It is beyond doubt that fewer illegitimate children grow up to maturity than children born in wedlock ; it doubles or even trebles the chances of an infant dying before it reaches its first birthday. Illegitimacy is in itself an evil to man and we should seek to diminish the number of illegitimate births."

114. Out of 18,331 births the number of male children born was 9,418 and the female 8,913, the proportion of male to 100 female births being 105.7.

115. The number of still-births recorded during the year was 650 against 606 in the previous year.

TABLE D.

Table showing the number of still-births and illegitimate births.

Years.	Still-Births.	Illegitimate Births.	Hospital Births.
1910 ...	673	1,166	3,347
1911 ...	665	1,132	3,532
1912 ...	674	1,025	3,375
1913 ...	642	897	3,687
1914 ...	606	818	3,330
1915 ...	650	951	3,888

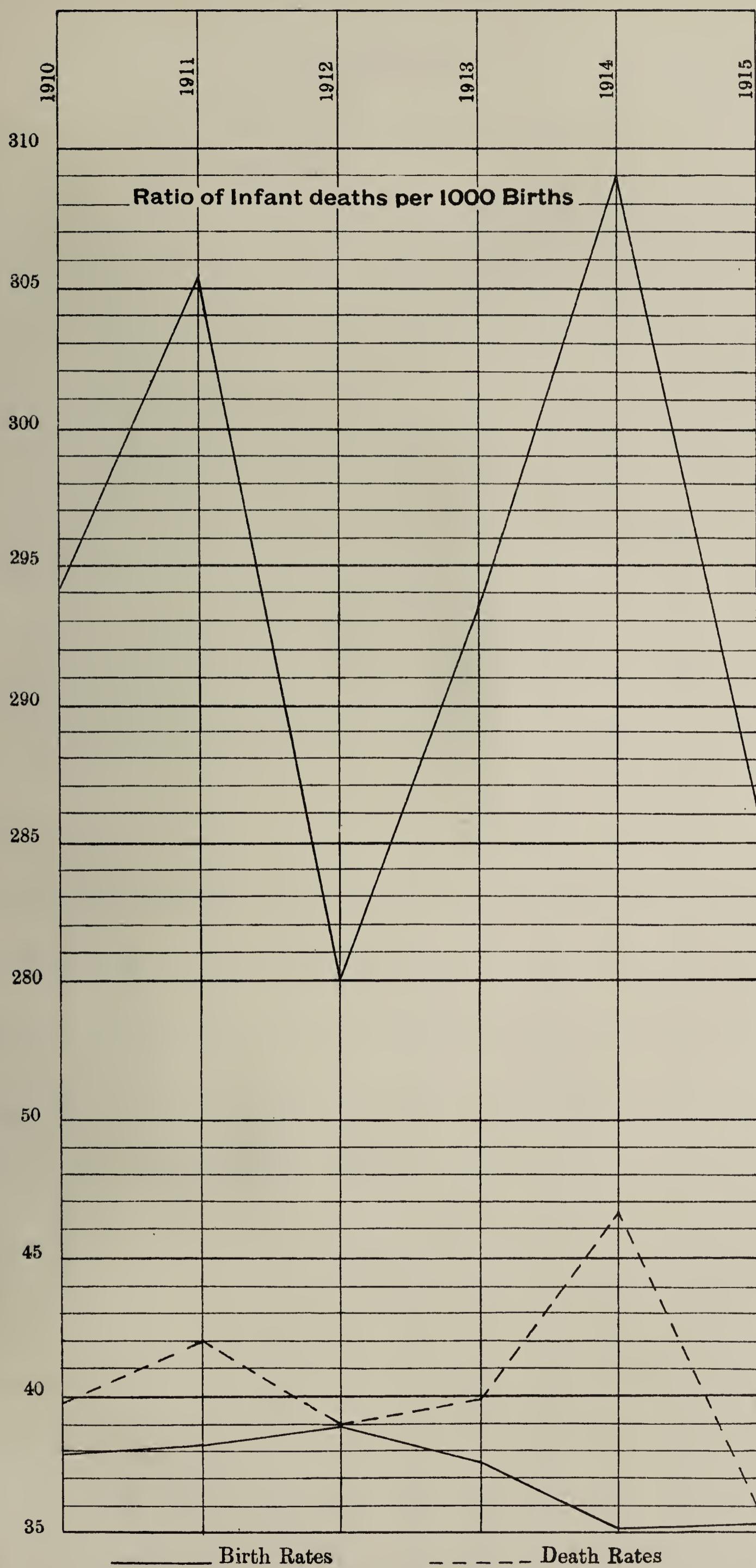
Births in Hospitals.116. 21.2 *per cent.* of the registered births in the

City were hospital births. These were distributed as follows :—

Government Maternity Hospital	...	...	...	2,033
Rajah Sir Ramaswami Mudaliyar Lying-in-Hospital	...	...	...	935
Victoria Caste and Gosha Hospital	...	...	...	598
Christiana Rainy Hospital	...	...	...	206
Kaliyani Hospital	...	...	...	111
Station Hospital, Fort St. George	...	...	...	2
Leper Hospital	...	...	...	2
The Penitentiary	...	...	...	1
				—
			Total	3,888
				—
In 1914, the corresponding total was	...	...		3,330

Infantile Deaths.117. The number of deaths registered as occurring amongst children under one year of age was 5,244. The death-rate when stated as **Infantile Mortality.** a proportion of deaths of infants under one year of age to the total number of births registered during the year is found to be 286.1 against 308.9 in 1914. Graph facing this page shows the rates of infantile mortality *per 1,000* births for the six years from 1910 to 1915. Of 5,244 deaths, 2,859 were males and 2,385 females, *i.e.*, a ratio of 119.9 to 100. If the records of previous years are looked into, it is found that the infant mortality in Madras is always high, the lowest ever known within the last ten years being 270.7 in 1907.118. Infantile mortality has been calculated above on the actual number of births registered ; but for a correct estimate, it has to be calculated on the corrected number of births, so as to include infants who died during the year without their births being registered. As worked out above, the corrected number of births is 26,377, giving an infantile mortality of 198.8 *per 1,000* births. This for a City like Madras may be considered fairly accurate and does not compare unfavourably with other provincial cities or with the whole of India.119. Of the 5,244 deaths, 1427 or 27.2 *per cent.* died in the first seven days.

Age Incidence. of life while 2,317 or 44.2 *per cent.* died within a month of being born. 3,739 of the children or 71.3 *per cent.* died before reaching the age of six months. The infectious diseases peculiar to infants were not prevalent in an epidemic form during the year under report. Still 44 *per cent.* of children born died within the first month of life.



Graph Showing

- Infantile Deaths
- — — Total Deaths from Dysentery and Diarrhoea
- Total Mortality

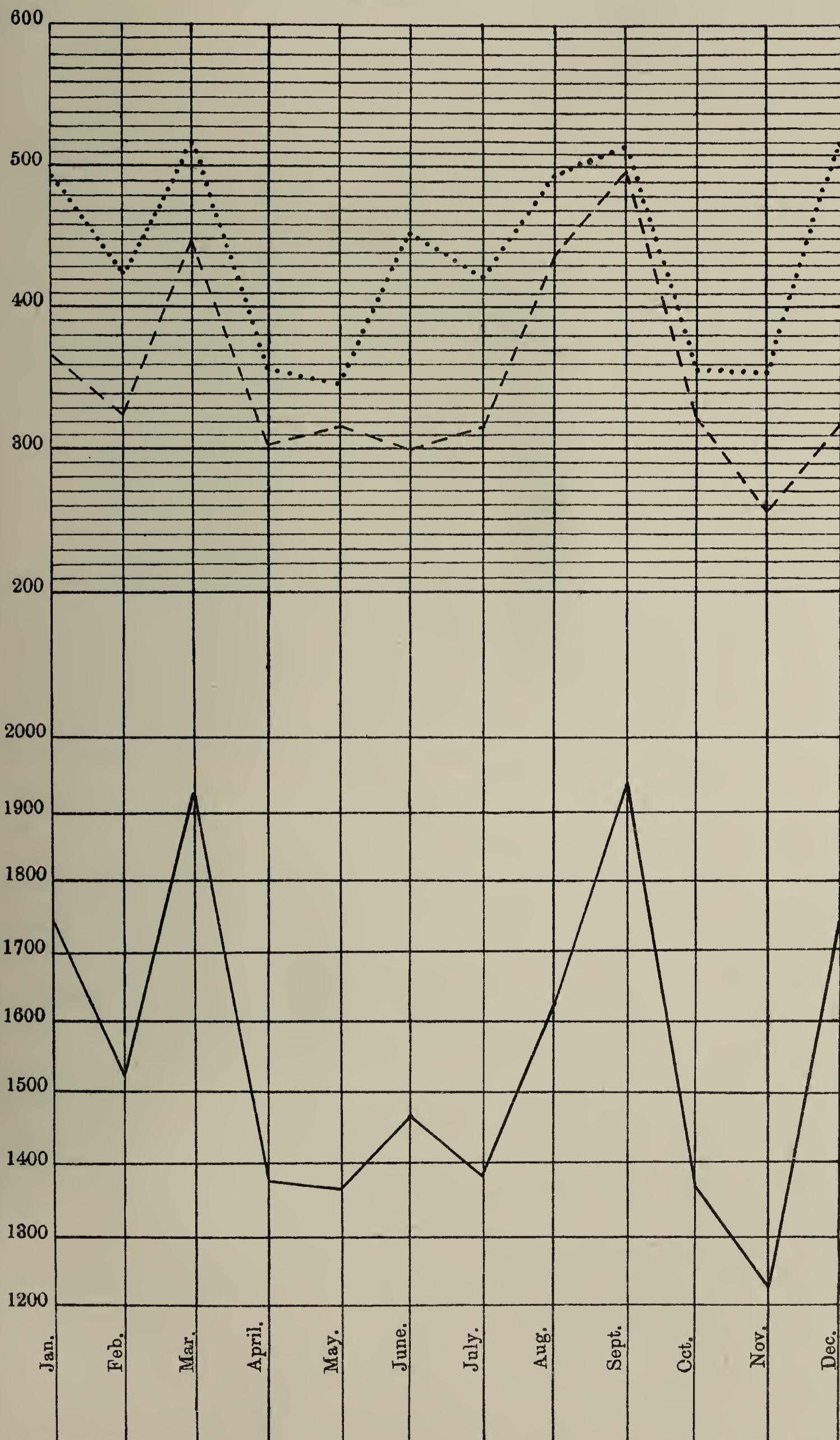


TABLE E.

Table of infant mortality by months in the year 1915.

Months.	Debility.	Nervous Diseases.	Respiratory Diseases.	Intestinal Diseases.	All other Causes.	Total.			1914 all causes.
						Males.	Females.	Total.	
January	22	167	76	104	123	284	208	492	121
February	23	139	55	114	91	250	172	422	437
March	33	140	60	104	178	275	240	515	432
April	17	107	55	86	93	186	172	358	473
May	7	100	52	99	89	190	157	347	406
June	...	118	51	90	194	231	222	453	362
July	...	135	64	117	105	227	194	421	400
August	1	139	74	152	125	263	228	491	461
September	2	120	56	117	217	269	243	512	589
October	5	109	40	82	123	206	153	359	474
November	18	110	54	51	121	193	161	354	418
December	22	141	76	71	210	285	235	520	562
Total ...	150	1,525	713	1,187	1,669	2,859	2,385	5,244	5,135

120. Table E shows infant mortality by months in the year 1915 as compared with 1914. January, March, September, and December were the months showing the highest death-rates. These are usually the months when a large number of deaths occur in Madras from such diseases as Diarrhoea, Dysentery and Malaria. Compared with 1914, the deaths *per month* are less during all the months except March, June, July and August. There appears to be a curious rise of infant mortality month by month each quarter, so that during the month ending each quarter more deaths are recorded than during the preceding two months.

TABLE F.

Table of deaths among infants under one year of age from principal causes by age periods in the year 1915.

Age periods.	Small-pox.	Measles.	Malaria.	Auge and Remittent fever.	Diarrhoea and Dysentery.	Premature birth.	Debility.	Nervous system.	Respiratory system.	All other causes.	Total.	Percentage of deaths in each age period to total deaths under one year of age.
1 to 7 days ...	...	...	...	2	7	832	68	368	26	124	1,427	27.22
7 to 30 days...	...	...	...	2	56	115	40	487	51	139	890	16.98
1 to 3 months.	1	...	1	10	125	19	16	267	91	81	611	11.66
3 to 6 months.	6	4	7	17	268	5	22	210	178	94	811	15.47
6 to 9 months.	6	8	10	12	369	...	3	117	222	76	823	15.70
9 to 12 months	6	9	9	22	362	...	1	76	145	52	682	13.01
Total ...	19	21	27	65	1,187	971	150	1,525	713	566	5,244	—

TABLE G.

Table of percentages of infant deaths from principal causes in the year 1915.

Age periods.	Small-pox.	Measles.	Malaria.	Aague and Remittent fever.	Diarrhoea and Dysentery.	Premature birth.	Debility.	Nervous system.	Respiratory system.	All other causes.	Total.
1 to 7 days	...	...	...	0.14	0.49	58.30	4.77	25.79	1.82	8.79	27.22
7 to 30 days	...	...	...	0.22	6.39	12.92	4.49	54.72	5.73	15.62	16.98
1 to 3 months	0.21	...	0.26	1.64	20.46	3.11	2.62	43.70	14.89	13.26	11.66
3 to 6 months	0.74	0.47	0.86	2.10	33.05	0.62	2.71	25.89	21.94	11.59	15.47
6 to 9 months	0.73	0.97	1.22	1.46	44.84	...	0.36	14.22	26.97	9.23	15.70
9 to 12 months	0.88	1.32	1.32	3.24	53.24	...	0.15	11.18	21.18	7.62	13.01
Total...	0.36	0.40	0.51	1.24	22.64	18.52	2.86	29.09	13.60	10.79	

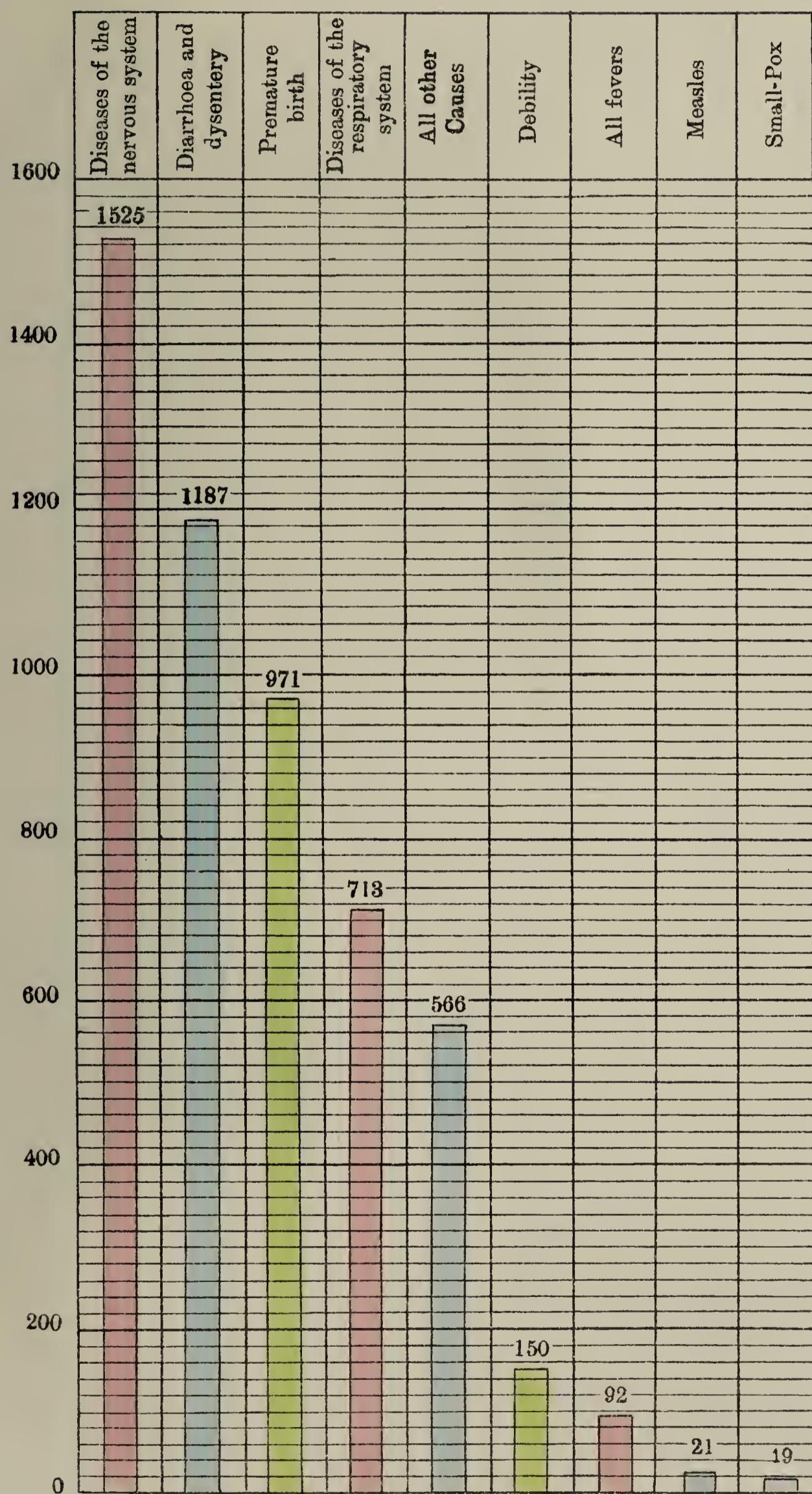
121. Table F shows infantile mortality by age periods under one year from principal causes and Table G shows percentages of infant deaths under one year from principal causes of death. It will be found from the above table that the main causes of this mortality work out thus:—

Diseases of Nervous System	...	...	29.09 <i>per cent.</i>
Diarrhoea and Dysentery	...	...	22.64 „
Premature Births	...	...	18.52 „
Diseases of the Respiratory System	...	...	13.60 „

More than 50 *per cent.* of deaths are due to causes purely preventable or remediable by the observance of simple rules of living. But such observance is often hampered by the economic conditions of parents, namely, poverty with insufficient and inefficient food, bad housing and bad surroundings. A potent source of misfortune is the necessity to work and earn among the women of the poorer classes. Among the poorer classes children come into the world surrounded by unhygienic conditions only to die within the very first days or months of life, and often from trivial causes. During 1915 as many as 27.22 *per cent.* of children died within the first seven days of life. Infantile deaths registered from certain other causes are as under :

Small-pox	...	...	...	0.36 <i>per cent.</i>
Fevers	...	...	...	1.75 „
Debility	...	...	...	2.86 „

Causes of Infantile Deaths



Infantile deaths by months.

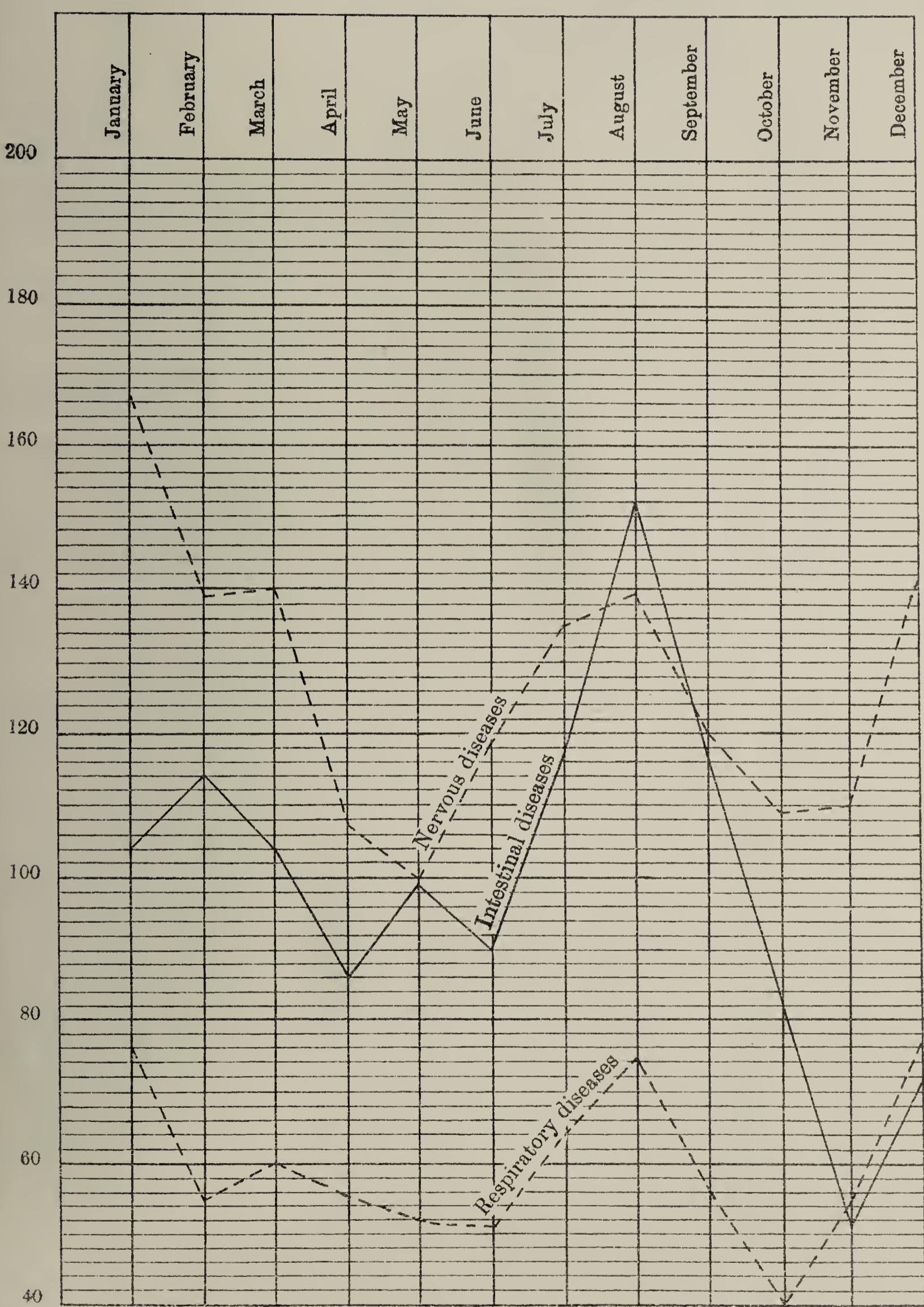


TABLE H.

Table of mortality among infants and death-rate *per 1,000* of births registered in each race during the year 1915.

Race or caste.	Death under one year.	Number of births registered.	Infantile mortality per 1,000 of births in the race.	1914.
Europeans	...	84	71.4	92.1
Anglo-Indians	...	355	137.2	162.1
Indian Christians	...	960	174.0	282.6
Hindus	...	14,769	295.6	303.0
Muhammadans	...	2,162	294.2	387.3
Others	...	1	...	...
Total	5,244	18,331	286.1	...

122. From the above table it will be seen that the infantile death-rate among Hindus was the highest, *viz.*, 295.6 *per thousand* births and the lowest amongst Europeans being 71.4 *per thousand* births registered by the race. Infantile mortality amongst Anglo-Indians is higher than amongst Indian Christians and does not correlate with the figures under total mortality. Among Anglo-Indians this great mortality amongst children appears to be compensated for by a lower number of deaths in adult life—a principle of the survival of the fittest. Compared with 1914, there is a marked fall amongst Indian Christians and a marked rise amongst Anglo-Indians. This is curious and difficult of explanation.

TABLE I.

Ratio of deaths among children under one year *per 1,000* births registered in each division during 1915.

Municipal Divisions.						Ratio of Deaths.
1	...	...	...	...	...	291.0
2	...	...	...	...	...	328.1
3	...	...	...	...	...	407.1
4	...	...	...	...	...	277.3
5	...	...	...	...	...	272.0
6	...	...	...	...	...	270.8
7	...	...	...	...	...	344.0
8	...	...	...	...	...	341.3
9	...	...	...	...	...	331.6
10	...	...	...	...	...	301.9
11	...	...	...	...	...	269.8
12	...	...	...	...	...	265.9
13	...	...	...	...	...	213.9
14	...	...	...	...	...	220.5
15	...	...	...	...	...	237.2
16	...	...	...	...	...	277.7
17	...	...	...	...	...	279.8
18	...	...	...	...	...	309.2
19	...	...	...	...	...	253.8
20	...	...	...	...	...	236.4
Total						286.1

123. From Graph facing page 10 it will be seen that in the 3rd Division the infantile death-rate was 407.1, much the highest of all the divisions, and the first three divisions which include the whole of Tondiarpet, showed a much higher rate than any other division. These are localities mostly inhabited by very poor labourers who live in badly congested surroundings. The lowest rates are to be found in the 13th and 14th Divisions. These rates have, however, to be accepted with great caution. There are many factors of error which make discussion of infant mortality on a divisional basis uncertain.

124. The female population is distributed unevenly. "The difficulties in the way of registration of all births occurring in the City, consequent on parental ignorance or neglect varying with the population inhabiting the different sections ; the prevailing custom of sending prospective mothers home to their native districts for confinement—resulting in an excess of infants in the City over those actually born and registered in it ; the inflation of the infantile death-rate due to out-born infants dying in the City ; further, the inter-sectional movement of population, neither uncommon nor infrequent, making it possible for children born in one Section to die in another ; and lastly what may be termed the migratory habits of the higher official and the affluent classes who send out their families to the most congenial or least inconvenient latitudes during certain seasons of the year ; all these causes operate in varying degrees in different sections of the City and influence the infantile death-rate".

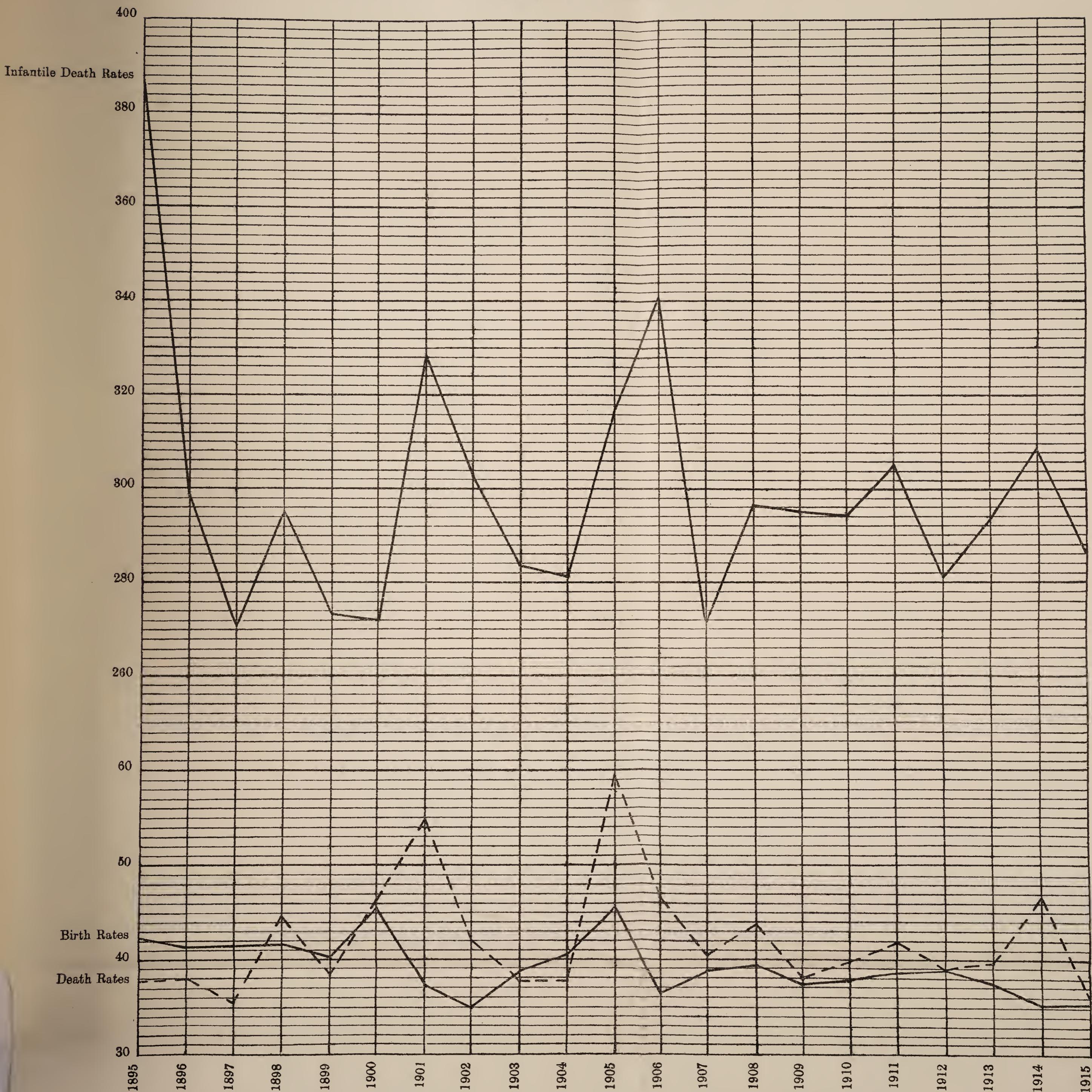
Deaths in 1915.

125. The number of deaths registered in the year exclusive of still-births was 18,688 against 24,174 in the previous year. The average for the previous five years was 21,412.8. The ratio of deaths calculated on the census population of 1911 was 36.0 *per mille* as against 46.6 in the previous year and the mean ratio of the previous five years was 41.3. The death-rate calculated on the estimated population was 35.8. Graph facing this page shows the death-rates for the previous twenty years.

126. The deaths among males numbered 9,364, and among females 9,324, the proportion being 100.4 males to every 100 females.

127. The number of deaths registered among Europeans was 72, Anglo-Indians 282, Indian Christians 816, Hindus 14,958 and Muhammadans 2,560, the ratios being 17.2, 27.3, 29.9, 30.6 and 43.3 respectively

Graph showing the Birth, Death & Infantile Death Rates for the Past 20 years from 1895 to 1914
as compared with those of 1915.



Causes of General Mortality.

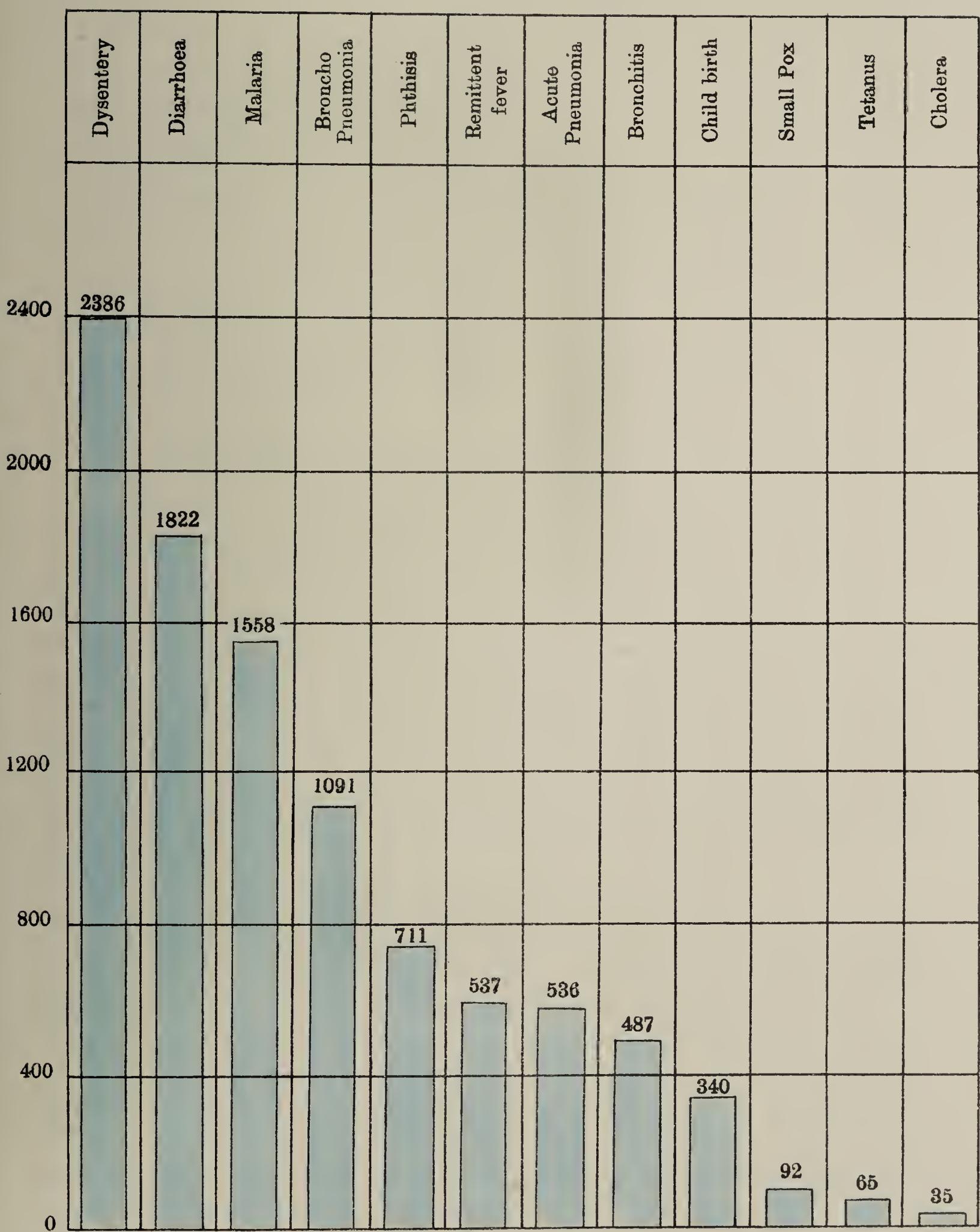


TABLE J.

The following table shows the death-rates among the important sections of the Hindu Community.

Sect.	Population (Census 1911)	Deaths in 1914.	Deaths in 1915.	Ratio <i>per mille</i> in 1915.
Brahmin	32,727	998	792	24.2
Chetty	36,414	1,233	1,087	29.8
Vellala or Mudaliar ...	66,551	2,917	2,185	32.8
Balijah or Naidu	47,811	2,059	1,519	31.8
Vanniah or Naicker	50,209	2,650	1,994	39.7
Pariah	59,651	3,015	2,267	38.0
Patnawar	9,799	555	428	43.7
Yadaval or Idayar	14,308	802	522	36.5
Visva Brahmin or Kammalar ...	15,626	643	633	40.5

128. Total mortality was as usual the heaviest (5,244) among infants under one year of age. Next (3,504) come adults of 60 years and upwards. Next comes age group 1 to 5 years with 2,748 deaths; so that out of 18,688 deaths as many as 7,992 or 42.8 *per cent.* of deaths occur amongst children under one year and between the ages 1 and 5. This is not a very hopeful sign. There is a sudden drop thereafter in the age periods 5 and 10, 10 and 15 and 15 and 20 years. Then again the mortality rises until the maximum is reached in the age period 60 and upwards. The principle of the survival of the fittest may apply for Madras, but steps to avoid such large loss of prospective adults are desirable. Such steps as are described in relation to infant mortality apply equally well for the age group 1 and 5 years. The Government in G.O. No. 82-M., dated 10th January 1916, have already brought to the attention of the Corporation the urgency for this matter.

129. The number of deaths certified by qualified medical men was 2,165 or 11.6 *per cent.* of the total number of deaths in the city. Certified Deaths. Of these 482 or 2.6 *per cent.* were certified by private Medical Practitioners and 1,683 or 9.0 *per cent.* by public hospitals.

130. Diagram facing page 40 shows graphically the chief causes of death. Causes of Mortality—Malaria. Malaria is responsible for 9.0 *per cent.* of the total deaths against 11.0 in the previous year. Annual Form X (see graph facing page 42) shows that 1,686 persons died of this cause against 2,658 in 1914. A full report of the Special Malaria Officer on the work of that department will be found in the President's Administration Report.

131. The number of deaths registered from these causes was 4,208. This represents a death-rate of 8.1 *per 1,000* from bowel diseases alone. The largest number of deaths were recorded in September and next in March and August. (See graphs facing this page.) The mean ratio for the previous five years was 9.3. It is equal to 22.5 *per cent.* of the total mortality as against 22.8 *per cent.* in 1914. It is to be noted that in all age groups there is a heavy fall under this disease, especially in infant life. Annual Form XIII gives figures showing the local variations in the mortality from these intestinal diseases, while graph facing this page shows a comparison with 1914 in this respect. Of the 4,208 deaths, 1,187 or 28.2 occurred amongst infants under one year of age.

132. Of the 2,245 deaths registered under this heading, 1,525 were those of children under one year of age, who presumably died of 'convulsions'. Of the remaining 720 cases, 48 deaths were registered as due to puerperal eclampsia, giving a death-rate from this disease of 0.2 *per mille* of the female population.

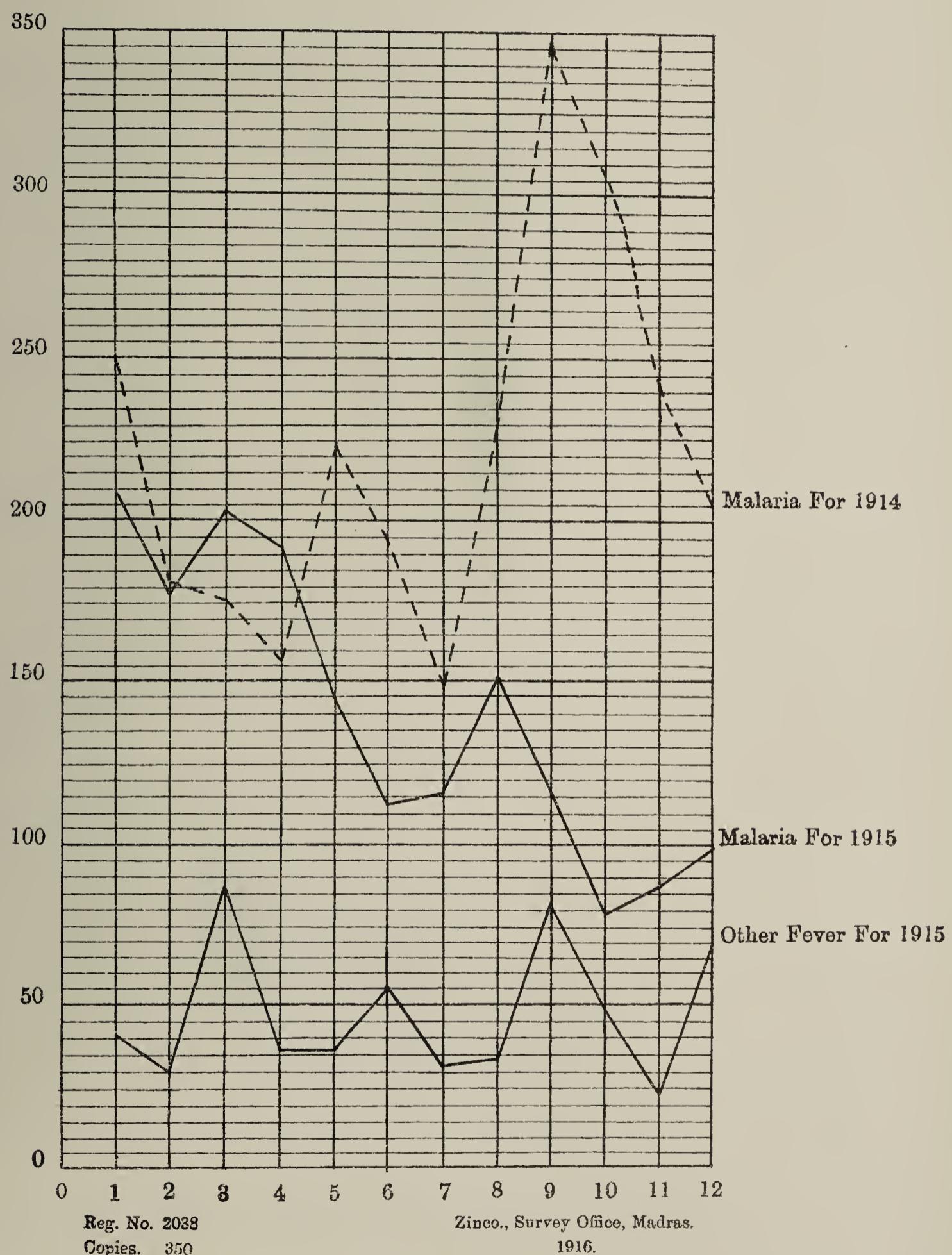
133. Hemiplegia accounted for 210 deaths and tetanus for 65. The figures recorded under infant mortality are not quite reliable. Many cases of infant deaths due to other causes as teething, fever, dysentery, pneumonia are often returned under this heading by the lay public, who only remark the onset of convulsions just prior to death and report this as 'Junni' (ஜுனி).

134. (Excluding tubercle and tubercle of the lung.) *Table No. XV.* 2,303 deaths were due to Respiratory Diseases being 721 deaths less than the previous year. The ratio is 4.4 *per mille*. The largest number of deaths from Respiratory Diseases were in September and December. Unlike in 1914, there was no marked increase in the latter half of the year. Overcrowding and accumulation of filth near dwelling and sleeping rooms giving rise to emanation of foul gases render people susceptible to lung troubles and a sudden exposure to cold or a wetting in the rain is all that is required to bring about the disease. Taken by divisions, the 17th and 18th divisions have had the largest number of deaths under this cause, and this is to be expected from the conditions there prevalent.

135. 759 deaths were returned under this head with a slight increase of 21 deaths over the previous year. The ratio is 1.5 *per mille*. **Tubercle including Tubercle of Lung.** It does not appear to be fully recognised by the public yet that tuberculosis is a 'dangerous' disease and that some system of "control" of cases is necessary. This can only be done by making the "notification" of this disease compulsory. This would be certainly a help in the obtaining of reliable statistics for the Government or Corporation in their attempts to reduce mortality under this head.

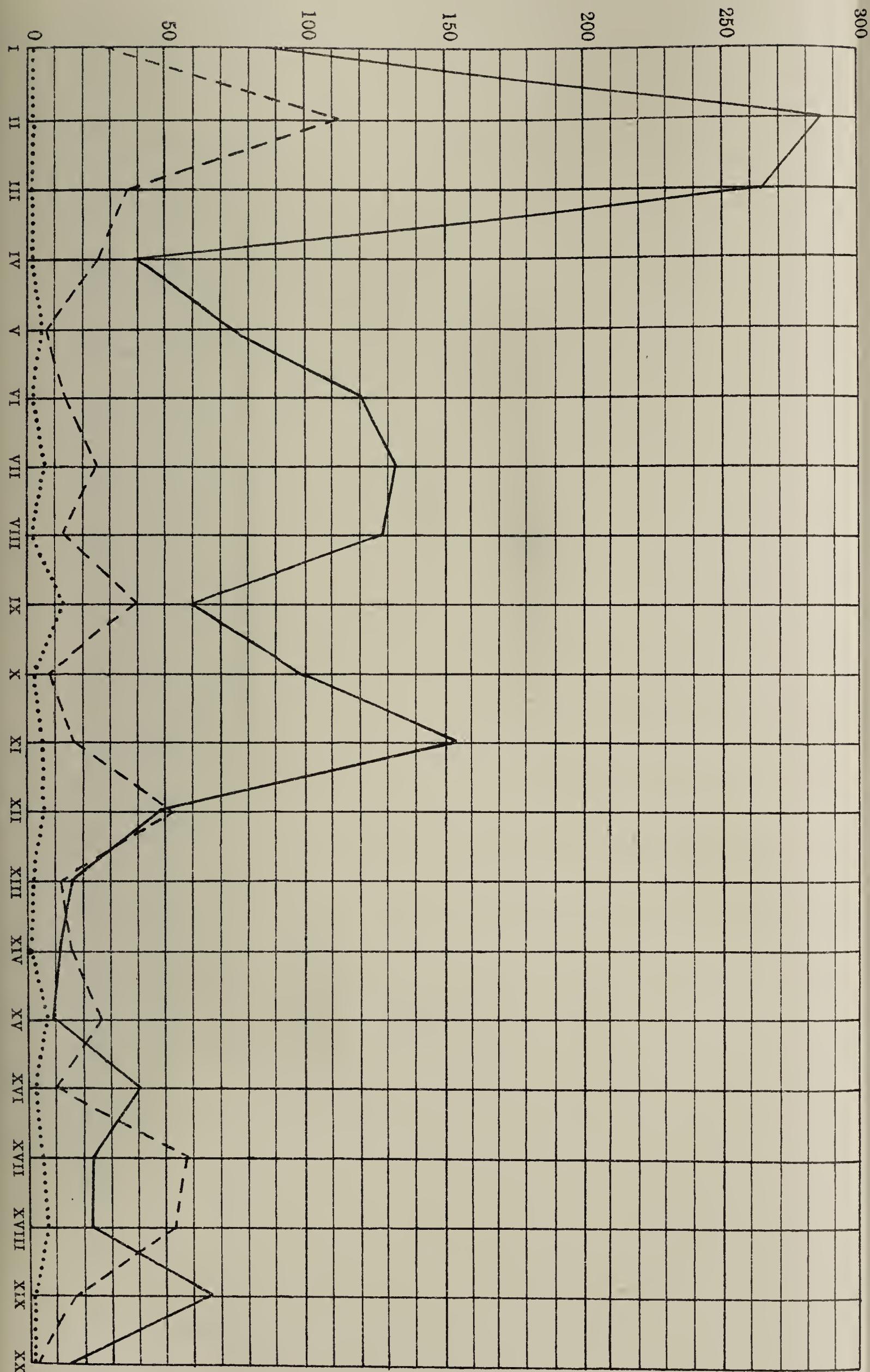
136. 18 deaths were registered as due to kala-azar. The corresponding numbers for 1913 and 1912 were 13 and 37 respectively. **Kala-azar.** These statistics are not reliable. The disease is not recognised in its early stages, and is recognised with some amount of difficulty even

**Graph showing the Total Deaths from Malaria and other fevers
during each month of the year 1915.**

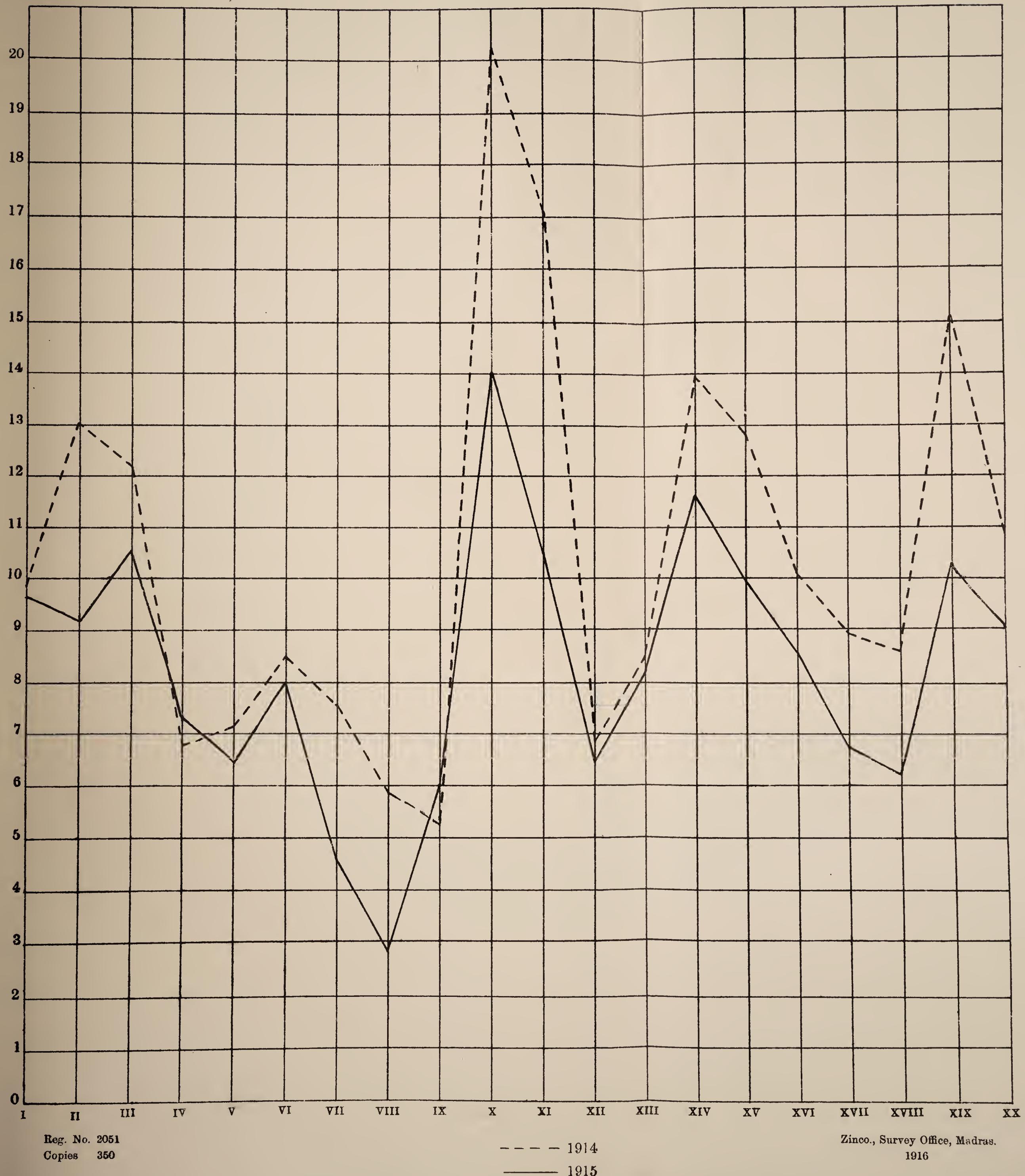


Graph showing Deaths from Malaria, Typhoid & Other Fevers by Divisions.

— Malaria.
..... Typhoid.
- - - Other Fevers.



Graph Showing Death Rates of Dysentery & Diarrhoea For 1914 & 1915 according to Divisions.



in an advanced stage. Deaths from this cause are often returned as due to simple continued fever, (Enteric, Malaria or other fevers).

137. 154 applications were received during the year for extracts of entries from the birth registers and 242 from death registers.

Extracts of births and Deaths Out of these, the number of birth extracts granted was 110 and of death extracts 181. In 100 cases extracts were not granted as the parties failed to pay the prescribed fees. In five cases entries were not found and the parties were accordingly informed. The fees collected during the year for such extracts amounted to Rs. 480.

138. The registration of births and deaths is becoming more and more popular and there is a continued demand for authenticated certificates. The following table gives the total number of such certificates granted from 1911 :—

Year.	Births.	Deaths.	Total.
1911	65	174	239
1912	102	221	323
1913	109	275	384
1914	143	312	455
1915	154	242	396

Infectious Diseases.

139. Out of 66 cases reported during the year, 35 proved fatal against 2,332 and 1,757 respectively in the previous year when

Cholera.

cholera was epidemic, the ratio being 0.07 per mille . The mean ratio for the quinquennium was 1.2 against 0.5 in the previous year.

140. The number of attacks during the year was 314 of which, 92 proved fatal. The death-rate was 0.2 per mille . The highest

Small-pox

number of deaths in any one month was 17, which occurred in December. The number of deaths in the previous year was 66 and the mean ratio for the previous five years was 0.3.

141. The number of deaths registered from this cause was 81 against 87 in the previous year. The ratio for the year was 0.2 while the average ratio for the quinquennium was 0.2.

Plague.

142. There were no cases in the year but during the previous year there were three attacks and two deaths.

143. Deaths due to this cause were 75 or 9 more than the previous year, giving the ratio of 0.1. The mean ratio for the previous

Enteric fever.

five years was 0.1. The return of deaths for the previous ten years is shown as follows :—

Years :	1906	1907	1908	1909	1910
<i>Deaths :</i>	49	42	36	41	42
Years :	1911	1912	1913	1914	1915
<i>Deaths :</i>	52	42	51	66	75

144. The number of Corporation burial and burning grounds remained the same as in the previous year. The post of Inspector of **Burial and burning grounds.** burial and burning grounds was abolished and these burial grounds were placed in charge of the Sanitary Inspectors of the respective divisions.

145. Of the 18,688 dead bodies during the year, 14,316 were buried and 4,372 were burnt. Burying is the more popular mode of disposal of the dead. Considering the clayey nature of the soil in most of the larger burial grounds, and the sluggishness of the sub-soil drainage, the location of some of the burial grounds is not satisfactory, and arrangements should be made to open new burial grounds at a distance from the inhabited localities.

146. Lands for the erection of tombs were sold to 95 applicants during 1915, the amount collected being Rs. 581-4-0.

147. During the year the number of prosecutions instituted for failing to **Prosecution.** register births within the time allowed by the Act was 5 and for deaths, 19. Convictions were obtained in 20 cases and in the remaining four cases the parties were acquitted or the cases withdrawn. The fines imposed amounted to Rs. 21-4-0.

SANITATION.

Sanitation.

148. There was practically no cholera during the year.

Small-pox was prevalent in sporadic form during the year but during the months of November and December the number of cases increased. The disease was declared epidemic in January, 1916. There were 314 attacks and 92 deaths during the year of which 73 attacks and 26 deaths occurred during the months of November and December. The great concourse of people from various places to Madras during the Industrial Exhibition and Park Fair may have aided the spread of the disease.

Prophylactic measures were taken immediately.

(1) Pamphlets in English, Tamil and Telugu about the causes of the disease and the preventive measures to be adopted were freely distributed.

(2) Heads of Offices, Colleges, Firms, &c., were requested to encourage vaccination and re-vaccination amongst their staff, students, &c.

(3) The Sanitary Inspectors were required to make a house-to-house inspection to trace out small-pox cases and disinfect the houses and effects of the patients.

(4) Medical vaccinators were required to trace out all unprotected children and vaccinate them and at the same time re-vaccinate all contacts wherever possible.

(5) Isolation of patients in the house, if suitable, otherwise removal of patients to the Isolation Hospital.

(6) Two temporary vaccinators were appointed to help in re-vaccination, and a few plague and malaria nurses and the two female vaccinators assisted a good deal in vaccinating women and children.

149. As a result of the above, large number of re-vaccinations was effected at the close of the year. The effects of these measures could not be judged as the outbreak had just commenced when the calendar year was closing.

150. Enteric fever broke out in Triplicane and Mylapore Divisions in September and October, 1915. To combat this, Lt.-Col. C. Donovan, I.M.S., Superintendent, Royapettah Hospital, suggested anti-typhoid inoculations and the public were advised about this by means of advertisement in the local papers. Lt.-Col. Molesworth, I.M.S., Surgeon, 2nd District, also performed inoculations.

151. The work of the Sanitary Section is detailed hereafter according to the powers conferred under the Act.

152. The provisions of Sections 208 to 221 relating to Drainage were, for the most part, carried out by the Works Department in conjunction with the Health Department. The extent to which they were worked during the year will be seen from the following statement of notices and prosecutions. Under

Drainage Sections (208 to 221 of the Act).

Section 218, 53 notices were pending disposal at the commencement of the year, and 29 were served during the year. Of these, six notices were voluntarily complied with by parties, six by prosecution, 22 transferred to the Works Department for execution and recovery of cost, 44 cancelled and the remaining, namely, four await disposal.

153. Side drains were built in Rangiah Chetti Street, Raghava Chetti Street, Manicka Chetti Street, in the 11th Division. The houses in Singanna Chetti Street facing east (between Guruvappa Chetti Street and Sunkuvar Agraharam, the widened portion of Singanna Chetti Street) were connected with sewers. The sanitary condition of Kuyava Arunagiri Street, Asalambi Street, Gazatti Begum Street, Karim Subadar Street and Hajee Shaik Hussain Street in Meera-saibpet was very unsatisfactory due to the blockage or breakage of sewers. These streets have been improved by laying new sewer pipes by the Special Works Department and also by providing storm water drain and foul water drain, separately for all the houses in the locality. Further, notices under Section 308 of the Act have been issued for the repairs of bath rooms, washing yards, latrines and drains in the said houses. The low siphons of houses in Ammayappa Mudali Street and Muthiah Mudali Street, Royapettah, have been removed and new model siphons with silt-catch buckets have been provided. A new water main has been laid in Appaswami Koil Street and three water taps have been opened for the use of the public. New siphons with silt-catchers have been constructed in the 20th Division (Mylapore). The following repairs, etc., to the drains were done during the year.

(1)	Repairing and covering the drain in Aiyah Mudali Street, Chintadripet	...	...	...	...	16th Division.
(2)	Repairing the drains in Kandappa Mudali Street ..	...			8	"
(3)	Repairing the drains in Nellukara Veera Mudali Street	...			15	"
(4)	Covering the drain in Bells Road ...	...			17	"
(5)	Repairing the drain in Ramanujier Street ..	...			2	"
(6)	Covering the drain in Chinna Reddi Street, Egmore	..			13	"
(7)	Repairing the drain in Ponnappa Mudali Lane ...	...			12	"
(8)	Do. Karpura Mudali Street ...	...			12	"
(9)	Do. Tiruvottiyur High Road ...	...			3	"
(10)	Do. Ramanan Street ...	...			8	"

154. (a) A congested portion at the north end of Angappa Naick Street Paracherries and was acquired by the Corporation and a model school for Hutting Grounds. Muhammadans was constructed in its place.

(b) A portion of Vasapmode Paracherry was acquired under similar circumstances and a model school is being built.

(c) Eight huts in Mottai Paracherry Street and two in Sadayappa Maistri Street were removed.

(d) Congestion was mitigated by connecting Avadanam Paupier Second Lane with Govinda Naicken Street.

155. Under this head the opening of streets in several parts of the town may be conveniently referred to. The streets widened and opened during the year are :—

(1) Rangapillai Garden New Street	...	...	...	7th Division.
(2) Cuddapah Rangiah Chetti Street connected with Mattukara Veerabadran Street	...	...	...	12th "
(3) Corner of Chulai Bazaar Road	...	...	...	12th "
(4) Vadiyar Kanda Pillai Street connected with Swami Pillai Street	...	...	...	12th "
(5) Connected Pachayappa Chetti Street with Triplicane High Road	...	...	...	17th "
(6) The southern end of Muhammad Hussain Khan Lane (blind portion) was connected with Juvar Hussain Khan Street by acquiring some portions of some houses in the locality	...	...	19th	"
(7) Chanda Sahib Street was connected with Musta Regum Street by acquiring portions of the garden on the west	...	...	19th	"
(8) The corner at the junction of Royapettah High Road with Lloyd's Road was widened by acquiring portions of the adjoining land.	...	...	...	19th "
(9) The eastern corner at the junction of Mowbray's Road with Luz Church Road was widened by acquiring portions of the adjoining gardens	...	...	...	19th "
(10) Rosary Church Road was widened	...	...	...
(11) Mandavalli Street was widened by opening a new road through the adjoining garden	...	...	...	20th "

Public Latrines and Urinals, (Sections 222 and 223) Public Flush-out Latrines.

156. Two flush-out latrines at Velayudha Chetti Street, Pudupet, and one at the junction of Rama Naick Street and Thoppai Mudali Street, Tondiarpet, were built during the year.

157. For the installation of new flush-out latrines at the following places, tenders were accepted towards the close of the year and construction was started:—

- (1) Cooum River Road.
- (2) Kuppam Hutting Ground.
- (3) Angalamman Coil Street.
- (4) Varadappa Mudali Street.
- (5) Swami Reddi Street.
- (6) Shaik Maistri Street at the junction of Thambu Chetti Lane.
- (7) Sirdar Jung Garden Street.
- (8) Basin Road at the junction of Old Jail Street.
- (9) Cemetery Road.
- (10) Narayanappa Naick Garden 8th Street.
- (11) Periathambi Street, Kasimode Garden.
- (12) Palmyrakuppam.
- (13) Shaik Maistri Street.
- (14) Mottai Garden.
- (15) Kasimode near Flag Staff Street.

158. Besides the above public latrines, one flush-out latrine was constructed in the Sanjeevarayanpet Model School and the erection of latrine at the Model Paracherri in Cemetery Road was in progress.

159. As an experimental measure one public Torfit urinal was erected in Wall Tax Road and if this sort of lavatory proved a success, it is hoped to extend the same pattern to other places where public urinals are required.

160. During the year, the provision of latrines by persons employing workmen or labourers, by owners or occupiers of dwelling houses, of markets, and of cart-stands, was insisted on. **Private Latrines and Urinals (Sections 224 and 227).** 127 notices under Sections 224, 225 and 226 remained pending at the beginning of the year and 203 were served during the year; 127 were voluntarily complied with, 52 after prosecution, 14 were transferred to the Works Department for execution of work and recovery of cost, after conviction of the parties and 32 were either cancelled or withdrawn. The remaining 105 were pending disposal at the end of the year. Under Section 227, 12 notices were carried over from 1914 and 86 were issued during the year. Of these, 53 were voluntarily complied with, one by prosecution, nine were transferred to the Works Department, six cancelled, while the remaining 29 stood over.

Drainage of Private Streets (Section 245.)

161. No notices for the effective drainage of private streets were served on owners during the year. Last year's pending cases, *viz.*, five have been complied with.

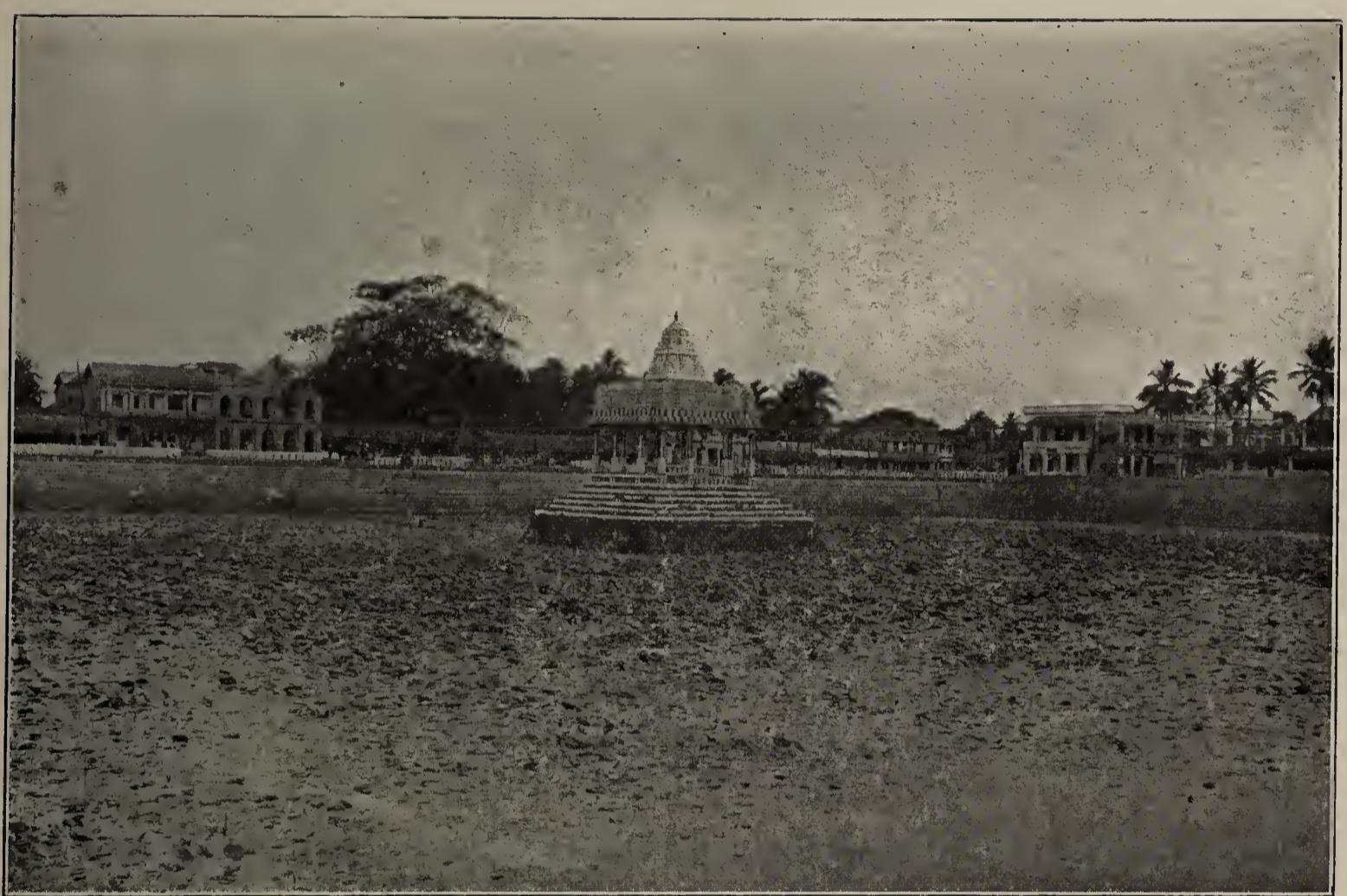
162. 2,146 applications were referred to and dealt with by the Sanitary Building Regulations Staff during the year. In the Hospital Plain in Choolai (Sections 260 and 265). and Pycroft's Lane, Triplicane, referred to in last year's report, steps were taken to put in roads and to make arrangements for drains and sewers; and thus the growing insanitation was put an end to.

163. Under Sections 300, Sub-Sections (5) and (6), 32 notices were carried over from 1914 and 49 were served during the year. **Prohibition against accumulation of filth and allowing sewage to flow in streets (Section 300).** Of these, 35 were voluntarily complied with, and 25 only after prosecution. Two were transferred to the Works Department and 18 were either cancelled or withdrawn. One thus remained undisposed of at the end of the year. A large number of the pending notices is for prohibiting sewage from flowing in streets and part of the delay must be attributed to the situation regarding the provision of underground sewage with house connections throughout the City and part due to the Act not being strong enough to get at the owners.

Unwholesome Sources of Water-supply and Stagnant Water (Sections 301 to 304).

164. 359 notices were served during the year in addition to 103 carried over from 1914. Of these, 103 were complied with voluntarily and 75 only after prosecutions. 83 were forwarded to the Works Department for execution of work and recovery of cost, 96 cancelled or withdrawn, 105 remained undisposed of at the end

Tanks, Wells, Ponds, Pits, Pools, etc.



An insanitary Temple tank in Madras.

of the year. Since the inauguration of the Special Malaria staff a definite and systematic policy has been adopted in treating wells and tanks of an injurious nature. This work is being continued under the supervision of the Special Malaria Officer and the guidance of the President. The particulars of the action taken in this direction will, however, be dealt with by the Special Malaria Officer in a separate report.

**Abandoned Places
(Section 305).**

close of the year.

165. Excluding 36 pending cases, 101 notices under this section were

served during the year. Of these, 80 were complied with, either voluntarily or after prosecution. 19 transferred to the Works Department; 29 cancelled; 9 remained at the

**Unwholesome lands
(Section 306).**

166. 359 notices under this section for the removal of filth, prickly pear or other noxious vegetation were served during the year, besides 25 left over in the previous year. The terms of

274 of these were complied with voluntarily, 45 after

prosecution, 13 transferred to the Works Department, 8 cancelled or withdrawn, remainder being 44.

**Lime washing and
cleaning of buildings
(Section 307).**

167. As the result of action taken under this section, 1,046 houses were white-washed and cleansed during the year, as against 1,239 last year.

**Insanitary buildings
(Section 308) and build-
ings unfit for human
habitation (Section 309).**

168. 866 notices were pending on the 1st January 1915. 2,958 houses were inspected in the course of the year with a view to remedy the sanitary defects. 2,138 houses were improved either voluntarily or by prosecution, while 274 notices were transferred to the Works Department for the work to be done at owner's cost, 298 were cancelled or withdrawn, leaving a balance of 1,114. 20 cases were pending last year under Sections 309 and 689 condemned during the year. Of these, 317 were vacated either voluntarily or by prosecution, 45 cancelled or withdrawn, leaving a balance of 347.

**Over-crowded build-
ings (Section 310).**

169. Much has to be done in the matter of removal of congestion in crowded parts of the City.

Fishing (Section 311).

170. 155 prosecutions for fishing, and for washing animals in the Cooum were instituted during the year. With the assistance and co-operation of the Police authorities, much has been done in this direction.

**Destruction of Stray
Swine, Dogs Homes and
Lethal Chambers (Sec-
tion 313).**

171. 73 swine owners were prosecuted for keeping swine within the municipal limits, without permission. 70 stray swine were destroyed by the Sanitary Inspectors under Section 313.

172. 3,275 dogs, 3,275 bitches and 218 pups were destroyed during the year, by means of hydrocarbon. The right of feeding dogs while in Lethal Chambers was not let on contract. The dogs were fed departmentally. During the year,

expenditure on feeding was Rs. 450-8-8, while the total amount realised by sale of skins and rewards for dogs claimed was Rs. 675-1-3.

173. There are 542 cattle yards (cow-houses) in the City. Six were refused

Cattle yards, Cow-sheds, etc. (Sections 314 and 315).

licenses, 423 were given conditional licenses and 113 unconditional licenses. The stringent measures taken to prevent stabling milch cattle in dwelling-houses continue

to be enforced. 1,190 prosecutions were launched and 503 convictions under Sections 314 and 316 obtained during the year to enforce the terms of licenses. The site of the Fiji Emigration Depot referred to in the last year's report for a model milk depot has been taken possession of by the Corporation but the construction has been postponed owing to financial difficulties. On the other hand, the one near the Basin Bridge which was sanctioned last year is receiving attention and an estimate for Rs. 56,000 for building a cow-shed has been approved. The work of construction is going on rapidly and it is hoped that during the year 1916 it will be completed.

174. Insanitary conditions prevail in stables and cart-stands, as in cattle-yards. There are 189 hack stables in the City, while the

Stables and Cart-stands (Section 315).

number licensed is 187 showing an addition of two stables.

175. Notices under Section 315 were issued to all stable-owners, especially in the North Range and in certain cases, prosecutions were begun under Section 316. Representations having been made that the Health Department's work in this direction was nothing but harassing to the public, a Sub-Committee was formed with the President and the Commissioners noted in the margin and at

**Mr. G. A. Natesan,
Mr. Md. Usman Sahib,
Mr. P. M. Sivangnana
Mudaliyar.**

their meeting held on 12th November 1915 it was resolved that the Health Officer who also attended the meeting, be required to draw up a scheme for the proper upkeep of stables. It was also resolved that the same be circulated

broadcast amongst the owners of horses or stables and that a period of three months from the date of issue of the circular be allowed to bring about the necessary alterations or reconstructions of the stable-houses, and that if after this period no improvements in the directions mentioned are effected, the defaulters be proceeded against under Section 316 of the Act, and that in cases where stables are used as dwelling places in contravention of the conditions required, action may be taken under Sections 309 and 310 of the Act. A copy of the rules framed is given in the Appendix. This circular has been printed and is being circulated.

Public Bathing and Washing Places. (Sections 318 and 319).

176. To the three bathing places referred to in the last year's report, two more bathing places one at Ice House Road (18th Division) and another at Basin Bridge Road (3rd Division) were added.

177. A scheme has already been drawn up for the construction of public bathing places in each division of the City and sites have been already recommended, the actual selection of the sites and construction having been postponed for the present on account of the usual want of funds. It may be pointed out here that the existing bathing places which do not have a watchman are generally

converted into latrines and in consequence, the bathing places could not be kept open always. It is therefore suggested that the public bathing places may be provided with small flush-out latrines close by.

178. Nothing has been done as yet in the direction indicated in the last Administration Report under this head. 1,545 applications for licenses were received. Nine were refused. 873 unconditional licenses and 605 conditional licenses were issued, 58 remain pending.

Dangerous or Offensive Trades (Sections 320 to 324).

Dyeing pots in inhabited localities.

179. 66 applications were received, of which 34 were given conditional licenses, 29 unconditional licenses and three were pending at the end of the year.

180. 606 applications were received for the licensing of paddy-boiling houses. Of these, no application was refused, 332 were granted unconditional, 251 conditional licenses and the remaining 23 are pending disposal.

181. The water-supply and drainage schemes referred to in the previous years have yet to come into full effect, to show better results in this direction.

182. 66 applications were received, one refused, 65 unconditional licenses issued. All licenses for lime-kilns within the City proper (Section 322). were refused as stated in the previous report.

183. 99 applications were received during the year for the licensing of oil mills. None was refused ; 24 were granted unconditional licenses and 74 conditional licenses. The remaining one application was not disposed of at the close of the year.

184. 20 applications were received. One was refused, seven were granted unconditional licenses ; while the remaining 12 were granted conditional licenses, which demanded sanitary improvements within a prescribed period and nothing remained pending. Frequent and vigilant inspections by the Sanitary Inspectors and Food Inspectors were made during the year.

185. A new condition has been added in the licenses issued in the year 1916 that no bottles should contain "suspended or other impurities," and it is hoped that an improvement will be the result. Sections of the Act under this head are particularly defective.

186. 46 applications were received during the year for the licensing of bakehouses. 11 were granted licenses unconditionally while 35 were granted licenses, subject to the fulfilment of sanitary improvements. During the year under review, the workmen in bakeries were required to have their medical certificates renewed *year after year*. Thus chances of persons suffering from contagious or infectious diseases getting into bakeries have been minimised.

Bakehouses (Section 328).

187. During the year 1916, the question of sweet meat bazaars has been Sweetmeat Bazaars reviewed and no licenses to new bazaars will be granted (Section 328). unless the following conditions are satisfied :—

- (1) A well-ventilated house to carry on all preparations without inconvenience.
- (2) Separate places for washing utensils, kneading, storing raw materials, stocking finished articles, &c.
- (3) Kitchen with proper ovens and smoke flues.
- (4) Proper show cases.
- (5) Latrine accommodation.
- (6) Abundant water-supply.

188. 192 applications for sanitary certificates were received during the year ;

Coffee Hotels. 49 unconditional and 138 conditional licenses were granted after the defects pointed out by the sanitary staff were carried out by the proprietors, leaving five pending. "Good wine needs no bush." Similarly a good coffee hotel needs no board by way of advertisement. In this City though there are no good coffee hotels, there are a number of "best" coffee hotels, according to their notice boards, meaning thereby the reverse.—a wooden falsehood and not worth the board on which it is written.

189. These coffee hotels are a bane to the residents. For want of suitable powers under the Act, nothing much can be done at present. This is a pressing necessity and requires immediate attention at the hands of the Corporation. The part played by these insanitary coffee clubs, especially during epidemics such as Cholera, may be imagined.

190. These include hotels and Emigration depots. The old conditions **Lodging Houses.** referred to in the last year's report still exist. These houses, a complete list of which has been prepared, are being inspected by the President and Health Officer.

191. The system mentioned in the last year's report is working well. The **Washing (Section 329).** income for the year from the Chetput dhobikhana is Rs. 1,095-8-0. Owing to the limited accommodation in this dhobikhana (even after the recent extension) all the dhobies living in the neighbourhood could not be forced in. There are about 200 dhobies still awaiting accommodation. Proposals have been made for further extension eastwards but have been kept in abeyance for want of funds.

192. In the dhobi-khana each dhobi is charged a rent of annas eight *per mensem*, room rent and annas eight washing fee. A room is shared between two dhobies.

This Chetput dhobi-khana cost Rs. 30,900, and the revenue for 1915-16 was Rs. 1,124-8-0. The expenditure was Rs. 612, the balance thus being Rs. 512-8-0. But the cost of water has not been included on the expenditure side ; this would leave a very heavy debit balance against the institution.



How Bura Sugar is made in Madras.

[Aska sugar is dissolved in water and boiled in iron chatties or bowls until it is made into paste. It is then poured into another chatty and country brown sugar or powdered jaggery is added to it in the proportion of (8) eight parts of country sugar to 100 of Aska. Then the whole thing is stirred up well with an iron oar until it is well mixed and condensed. This is then finally spread on the bare floor in an ill-ventilated room and crushed with a wooden rod as illustrated above. A cooly with a bare body gets on the rod and supported by two sticks works at the mass backwards and forwards till it is reduced to a soft fine powder. It is then packed for sale. There is a large demand for this sugar. It is considered sweeter than Aska or foreign sugar. But it is very likely that during this operation, the sugar is contaminated with sweat dirt and probably spit.]

193. The dhobi-khana is being worked without any definite by-laws or standing orders. From the experience now gained, by-laws are being drafted for approval of the Corporation and Government.

194. 270 applications for licenses from—dhobies under Section 322 of the

**Washing and Storing
Soiled Clothes.**

Act were received during the year ; seven were rejected, 151 licenses were issued unconditionally, 92 conditionally, leaving a balance of 20.

Slaughter-houses (Sections 331 and 335).

195. The number of sheep and goats slaughtered during the year was 361,745, the number of cattle 16,863 and the number of pigs 1,857.

196. The motor meat vans referred to in the last year's report worked well except for a short period during two occasions, in the year, owing to some trouble in the mechanism. The collections from the meat vans are Rs. 4,811-4-6, while the expenditure on this account is Rs. 4,119-7-1. The right of collecting rents and fees for the use of the slaughter-houses under Section 331 and of levying license fees as required by Section 334 is annually leased out and the total receipts under all heads including that for delivery of carcases amounted to Rs. 70,841 for the official year. The removal of blood from the slaughter-houses was sold in auction on the 12th April 1915 for one year and eleven months commencing from 1st May 1915 for Rs. 975. The blood contractor has been removing the blood as per terms of his agreement.

197. During the year, permission was granted for the slaughtering of sheep, goats and pigs in private houses on occasions of religious ceremonies and festivals and the numbers so slaughtered were 1,693 sheep or goats and 10 pigs. Every attempt is made to ensure that these applications are strictly *bona fide*.

198. A great number of bullocks, cows, sheep and goats were brought in for slaughter. The number slaughtered in 1914 was 3,84,264, while the number in 1915 was 380,465. Five pairs of bullocks were maintained to convey offal matter during the temporary break down of motor meat vans and to remove the manure to the dumping grounds.

199. The right of lighting and maintaining the eight power lamps in the slaughter-houses was let on contract with effect from 1st April 1915 to Messrs. S. R. Sabapathi & Co., Mount Road, at the rate of Rs. 10 *per* lamp *per* mensem. The lamps worked satisfactorily.

200. The Corporation maintains two markets *viz.*, the Moore and the Smithfield markets. The right of collecting fees from the latter was leased out for the year 1915-16 for Rs. 4,000 while the collection of rents from the former is, as usual entrusted to the Revenue Department. Both markets are, however, under the administrative control of this department and their sanitary condition was on the whole satisfactory. As there were not sufficient vegetable stalls in the Smithfield Market, vegetables were being sold in gangways and during the year two new stalls for vegetables were put up in addition to the piece-meat stall which was repaired. Extensive general repairs to this market were also done.

**Markets : Public and
Private.**

201. There are 46 private markets within the City licensed by the License Branch subject to the control of the Health Department as to sanitary conditions, such as the markets in Triplicane, Chintadripet, Tondiarpet, Angappa Naick Street, etc. Vigorous steps were taken during the year to improve the sanitation of all these markets. Surprise visits were made by the Sanitary Inspectors and Food Inspectors during usual and unusual hours of the day and the defects pointed out were remedied.

202. It appears to have been quite a custom here to spread the vegetables, etc., on the gangways and near street drains and gutters. This is a very offensive and dangerous practice and special efforts were made to prevent this. The greatest sinners in this respect are the owners of the Jam Bazaar, Pulibone and Chintadripet Markets and these were prosecuted and a warning given that the licenses would be withheld.

203. Further, the arrangements for the sale of meat, fish and vegetables in the majority of these mixed markets are far from satisfactory. The markets for the sale of animal food and of vegetables must be separated entirely. It means necessarily a multiplication of markets or at least two small markets where there is only one. Proprietors of all private markets should make an attempt at widening or enlarging their markets and set apart an enclosed place where animal food will be sold. In Bangalore city the vegetable market is quite separate from the meat market.

204. From a sanitary point of view private markets are far from satisfactory. The market gumastah, whose primary duty is to make a good collection of rents, is asked to look after the sanitation of the place also—duties which are not often pleasant for a gumastah to perform. The usual conditions of licenses are not promptly carried out. Cleaning of floors, etc., is done perfunctorily. Probably if a fixed time is appointed for cleaning purposes sanitary authorities may make surprise inspections. Markets still harbour myriads of flies. Systematic liming of gangways and drains and latrines has mitigated the nuisance to a certain extent. The causes are not far to seek—besides the filthiness of houses in the neighbourhood, the removal of rubbish, offal, etc., from the market is not satisfactory. Either the rubbish dust-bin is kept just outside with all the consequent disadvantages and dangers or a private uncovered masonry bin is built in the market with its ever reeking filth. The sanitary fly proof bin recently installed in the new Macdonald market in the Fifth Division may be advantageously recommended to other markets. Dry fish stalls are another objectionable feature of a market. Dry fish should be kept in glass cases or cases covered with wire gauze.

Licenses issued. 205. 37 conditional, 6 unconditional, leaving a balance of three. During the year vigorous attempts were made to put down the overcrowding of markets.

206. The two big private vegetable markets referred to in the last year's **Vegetable Markets** Administration Report are in fairly good condition. Some more of these markets are necessary. A new vegetable market called "Macdonald" Market was opened by the President of the Corporation on 18th November 1915 in Salai Vinayagar Coil Street, Muthialpet. This

was established by M.R.Ry. P. Velu Chetty Avargal. This new market was built on a site which was insanitary, harbouring cattle, etc. As soon as this was opened, vigorous steps were taken to drive out vegetable vendors who were selling vegetables on the road side in Mettu Street, Linghi Chetti Street and the adjoining streets. There are several places in Madras, mostly in North Range where vegetables and greens are sold along street sides over drains. An inspection in the mornings along Rasappa Chetty Street, Mint Street, Anna Pillay Street, Wall Tax Road, will indicate the amount of vegetables that are exposed for contamination. Prosecutions by this department have had little effect. There is a proposal to open a vegetable market in Wall Tax Road.

207. During the year, the Kothwal Market had many improvements done to it. As it is cramped in spite of the various improvements, its extension is under consideration. It may be mentioned here that masonry platforms in 76 cases were erected in front of the grain bazaars in Wall Tax Road.

While the Periamet Market is kept scrupulously clean, the Chintadripet Market ranks low in the scale. It is an eyesore to the neighbourhood and requires much improvement.

The market known as Central Market in the 17th Division was closed under the orders of the Standing Committee as the owner did not improve its sanitary condition, in spite of persuasion, warnings, etc.

Sale of Eatables in Streets. 208. As this is highly objectionable rigorous attempts were made to put a stop to such sales. 88 prosecutions against defaulters were instituted under Section 351.

209. Such eatables are mostly exposed over drains. Foul gases from the drains below and the dust blown by the winds from above and myriads of flies that are attracted from all round render the eatables highly dangerous for human consumption. Considering the amount of eatables manufactured and distributed every day and considering the number of poor people and children that consume them, it is no wonder that our statistics show a large figure under "bowel" complaints.

Food and Drugs. 210. The question of a Chemical Laboratory and the Chemical Analyst referred to in the last year's report is still pending. As usual, the Madras Port Trust, the Railway Goods Shed at Royapuram and Salt Cottars were vigilantly watched during the year. The statements on pages 108 to 113 will show the work done by the Food Inspectors in these places.

211. The unbearable stink during certain seasons of the year emanating from the Buckingham Canal had better be imagined than described. Urgent and extensive remedial measures ought to be taken. The canal is in charge of the Public Works Department.

CONSERVANCY.

The following is the report of Dr. Singaravelu, L.R.C.P. & s., Senior Assistant Health Officer, on the conservancy of the City :—

212. The conservancy of the City continued to be under the direct control of the two Range Assistant Health Officers until August 1915. It was then placed under the control of the Senior Assistant Health Officer who was relieved of his sanitary duties. This was a movement in the direction indicated in the special report on Conservancy by the City Engineer, the Senior Assistant Health Officer taking up the duties of the full time Superintendent of Conservancy. The immediate supervision of the conservancy of each of the 20 divisions continued to be under an Overseer aided by 3 to 7 peons according to the extent of the division. There are 20 Conservancy Overseers and 103 Conservancy peons.

213. The Conservancy Overseers are mostly certificated Sanitary Inspectors. **Conservancy Overseers.** They have displayed a good deal of enthusiasm and interest in the discharge of their duties during the year under report.

214. There are 103 conservancy peons. They work directly with the coolies and are responsible for the cleanliness of their respective sections. For eight rupees *per mensem* it is not possible to enlist peons with sufficient common sense and tact in the management of the class of labour available for conservancy work. Most sweepers and scavengers get higher wages than the peons who are placed over them.

215. The enlistment of such ill-paid peons is admittedly not conducive to effective disciplinary control. It was therefore thought desirable to replace the conservancy peons by Gang Maistries from the sweeper class, and a trial was made in the 6th division. The Gang Maistries themselves were workmen and should have been able to direct the gang under them. This move was not successful in that the maistries with no sense of responsibility failed to keep the gang under control and obedience. With the present class of scavenger-labour available, it was not possible to continue the trial. The gang maistry system had to be given up and the peons regained their place in the conservancy staff.

216. There are 1,113 men, 101 women, and 103 boys engaged in cleansing the City. The details of the staff of coolies are given below :—

Sweeper maistries	...	...	...	20
Street sweepers	...	...	...	289
Side cooly maistries	...	...	...	22
Side drain coolies	...	...	...	261
Side drain boys	...	...	...	25
Cess-pool boys ...	...	...	...	36
Silt trap coolies	...	...	...	44
Main drain coolies	...	...	...	31

Latrine men ...	...	...	...	93
Latrine women...	...	...	...	101
Box-cart men ...	...	...	...	134
Sewage barrel cart-men	...	...	...	95
Sewage hand-cart-men	...	...	...	43
Reserve Sweepers	...	...	...	21
Dung boys ...	...	...	...	42
Dung peons ...	...	...	...	6
Night conservancy sweepers	...	...	...	26
Hand cart-men...	...	...	...	28

217. To each range are attached four conservancy bullock and cart depots each in charge of a Superintendent. These Superintendents are under the control of a Chief Superintendent who is directly responsible to the Health Officer for the proper conduct of the depots and for the health of the conservancy bullocks under his charge.

The details of the carts and coolies are as follows :—

1. *For the removal of rubbish :*

Rubbish carts ...	...	...	...	252
Trolleys ...	...	...	...	39

2. *For the removal of filth :*

Cylindrical night-soil carts...	...	...	...	66
Iron night-soil carts	...	...	...	176
Lorries ...	...	...	...	16
Night-soil hand-carts	...	...	...	28

3. *For the removal of silt, side scrapings and sewage :*

Box-carts ...	...	...	...	134
Sewage barrel-carts	...	...	...	32
„ hand-carts	...	...	...	43

The Details of Depot Staff :

Rubbish cart drivers	...	...	...	252
Trolley drivers ...	...	...	...	39
Night-soil cart drivers	...	...	...	242
Box-cart drivers	...	...	...	134
Reserve drivers	...	...	...	40

218. During the commencement of the year under report, shortage of Conservancy Labour. conservancy labour was so keenly felt that the experiment of reviving the contract system of labour was tried. It proved a total failure.

219. There are drivers quarters attached to two cart depots of the North Range. During the year under review model lines of 34 Cooly Lines. tenements were constructed adjoining Cemetery Road. Each dwelling was let out at a nominal rent of eight annas *per mensem* to the conservancy coolies on the distinct understanding that the tenant-cooly should serve the Corporation and be responsible for good behaviour

and proper conduct of public work. As the present financial situation does not warrant the desirable provision of more cooly lines, the existing model lines such as those at Vasapmode and Cemetery Road may gradually be let out to conservancy coolies as tenements fall vacant.

220. Better supervision has been brought to bear on drivers and working

Supervision over Carts and Drivers. of carts. Statistics in the form subjoined of the daily attendance of carts, bullocks and drivers are maintained

to watch daily movements. No cart is allowed to leave

the section with a meagre load unless there is no rubbish left in its working area. As a further check, inspection of carts by the Superintendents in charge of the places of deposit is ensured. These Superintendents are directed to issue load passes in coloured duplicate chits to the drivers, white, indicating full load and yellow, half load. The drivers hand over the chits to the Superintendents of the bullock depots who in consultation with Conservancy Overseers, check and verify these chits and punish or bring to notice defaulting drivers. This system has proved very advantageous and scamped work is becoming rare. Strict supervision of night-soil carts as to their condition, cleanliness and movements has been brought about. The night-soil carts of the 17th to 20th Divisions (both inclusive) do not leave the place of disposal without being completely washed and disinfected. The night-soil carts of other divisions are not washed at the depositing places as there are no facilities of water-supply and drainage. To make up for this, waste straw in bullock depots is burnt daily inside the iron night-soil carts and the carts are tarred frequently. No night-soil cart should be permitted by the Superintendent of the bullock depots to leave the depot without being completely deodorized and disinfected. Thus the nuisance from the misuse of these carts has abated to a certain extent. Attempts were also made to alter the design and construction of new carts so as to increase their cubic capacity and to facilitate easy loading and unloading. Further on my suggestion during the year; conservancy carts were worked with single bullocks so as to economise expenditure. So far the single draught night-soil and rubbish carts 30 in number, are working satisfactorily and are an improvement over the double bullock carts. This change will be extended further gradually. According to Budget for 1915-16, the complement of night-soil and rubbish carts is respectively 256 and 233. All the night-soil carts could conveniently be made into single bullock carts. The saving then would be Rs. 2,560 *per* month, it being the cost of fodder at the rate of Rs. 10 *per* bullock *per* month. The annual savings on night-soil carts would, therefore, be Rs. 30,720.

221. Rubbish carts working in the neighbourhood of places of deposit and in division where motor lorries work can be converted into single bullock carts. Half the number of rubbish carts can be so converted and the savings under this head will be Rs. 1,165 *per* month or Rs. 13,980 annually. The total savings under both the heads will then be Rs. 44,700 *per* year. To this may be added the amount of provision that need not be made for purchase of bullocks and this may be fixed at Rs. 3,780 in proportion to the provision of Rs. 15,000 for 738 pairs of animals for the City. All the single bullock rubbish carts are working in the 8th division with great success.

HEALTH DEPARTMENT.

CONSERVANCY SECTION.

Statement of Carts for _____

Depots.	Complement.	No. of carts not sent out for work.						No. of carts sent out in charge of			
				for want of							
		A. M.	P. M.	Carts.	Men.	Bullocks.	Sweepers.	Drivers.			
				A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.

Superintendent,

Depot.

ORIGINAL.

CORPORATION OF MADRAS.

HEALTH DEPARTMENT.

Conservancy Section.

Serial No. _____

Nature of cart _____

No. of cart _____

Time of arrival _____

Time of departure _____

DUPLICATE.

CORPORATION OF MADRAS.

HEALTH DEPARTMENT.

Conservancy Section.

Serial No. _____

Nature of cart _____

No. of cart _____

Time of arrival _____

Time of departure _____

Signature.

Signature.

222. It is obvious that good metalled roads help a great deal in proper cleansing and if such roads are effectively conserved their appearance is greatly improved. The same amount of labour bestowed on unmetalled streets and lanes does not bring into prominent relief the work done and the care taken for effecting thorough cleansing. But what with the prevailing high winds, increased motor traffic, indiscriminate deposit of house refuse on roadsides, the atmosphere of Madras is so impregnated with dust and dirt that it is not surprising that the mortality of the city is high from diseases carried through the agency of such dust laden air.

223. Roads and streets in the vicinity of houses under construction or reconstruction are rendered extremely untidy by the deposit of considerable quantities of building refuse. Very often the house-owners expect the conservancy carts to remove the debris, and no attempts are made by them to have the debris removed. Frequently country carts remove the debris only to deposit it

Influence of Construction and Reconstruction of Houses on Conservancy.

in some other lane or street close by, and eventually the Conservancy Overseer must have the stuff removed to the prejudice of the legitimate work of conservancy carts. In some cases conservancy drivers are bribed for stealthy removal of such refuse and supervision becomes extremely difficult. It would be well if, when sanction is given for carrying out building operations, the owner were bound down to remove house debris to places provided by the President, or the Corporation were to undertake removal of all such stuff at the parties' cost.

224. Much need not be said of the influence on conservancy of rearing of poultry within the city limits. Hens and chickens, ducks, &c., gather round dust-bins in search of scraps of food,

Rearing of Poultry and its effect on Conservancy.

scatter rubbish all over the street and into the drains and make the dust-bin sites hollow. Thus the work of the sweepers is increased.

225. Complaints continued to pour in from the public as in previous years as to the irregular and highly unsatisfactory way in which

Private Scavenging.

private scavenging is done and it is high time for the Corporation to solve the private scavenging problem to their economic advantage.

226. There are about 50,000 houses in the city and a full-time scavenger can conveniently conserve 35 houses daily. At the rate of 8 annas *per* house *per* month which is the average amount now paid by the public, Rs. 25,000 can be obtained. For conserving 50,000 houses, 1,428 scavengers are required and these, if paid at the rate of Rs. 10 *per* month *per* head, Rs. 14,280 will be spent on labour and Rs. 2,000 for supervision and contingencies giving a surplus of Rs. 8,720 *per* month. For a year the total income from this source will be Rs. 104,640 and this amount may be spent for further improvement of public conservancy. For obvious reasons one division in the city may first be experimented with, on the lines indicated, and if the experiment is found fruitful, private scavenging in other divisions may be gradually undertaken. In other Corporations scavenging of private houses is lucrative and is undertaken to the advantage both of the public and the Corporation.

227. Religious customs and habits of the people preclude to a great extent strict observance of the principles which are rigidly enforced in other countries. The question of deposit of

Habits of the People in relation to Conservancy.

household refuse in public dust-bins intended for the reception of such refuse, or in the alternative, the provision of domestic bins by house-owners has led to much public controversy. Even in streets where dust-bins are lavishly supplied people will not use them, but will continue to dump direct into side-drains or round the bins. It is as easy to empty the refuse into a bin as into the street, it is as easy to instruct children to defecate in the house latrine as to allow them to use the streets, and it is as easy to make a proper use of the public latrines as it is to foul its surroundings. Unless the people unlearn unhealthy habits and implant healthy habits in their children, ideal conservancy is not possible.

228. 1,314 bullocks remained on 1st January 1914. Of these, 90 died from natural causes, 65 from infectious diseases, and 63 were sold as unserviceable for conservancy work, 262 bullocks were purchased, thus leaving a total of 1,358 bullocks on 31st December 1915.

229. The total expenditure incurred during the official year for the maintenance of bullocks is Rs. 1,58,005-9-6 against Rs. 1,52,453-11-9 in 1914-15. This does not include the expenditure on purchase of bullocks (Rs. 14,183-10-0) and the wages paid to drivers (Rs. 73,614 approximately as against Rs. 62,288 for the previous year).

230. The amount spent on labour employed for conserving streets and public latrines was Rs. 1,21,651-7-7 against Rs. 1,02,408-12-6 for the previous year. This includes drivers' wages amounting to Rs. 73,614, which are debited in the accounts to the head "Maintenance of Bullocks."

231. During the year under report the general health and condition of cattle was good despite the various outbreaks of contagious diseases. In the months of February, October, November and December, Foot and Mouth disease prevailed in all the eight depots. Out of 175 cases, three proved fatal. Antiseptic foot-baths, in addition to the usual precautionary and curative methods adopted, arrested the spread of the disease. Anthrax broke out in an epidemic form in Basin Bridge depot. Cattle were isolated and sanitary precautions taken. Inoculations were resorted to. There were 41 deaths from this disease. Rinderpest broke out in four of the cattle depots during the month of June. All the cattle were inoculated with anti-rinderpest serum. There were 15 deaths from this disease. In September, seven cattle were attacked with Surra in F depot, of which six proved fatal. To stamp out this disease, the cattle were picketed in the open during nights and under the shade of the trees during days. Mangers and Standings are being renewed. There were in all 65 deaths from contagious diseases among our conservancy cattle during the year under review. This is to be expected from cattle which work in filth and dirt throughout the city and in the depositing places, where carcasses of cattle which died from infectious diseases are probably buried.

232. During the year, 30 rubbish carts, 20 box-carts, ten night-soil carts and six trollies were manufactured. Two new single draught rubbish carts were made and of these one was made of galvanized iron sheet and the other of wood. They have been at work on trial for the past few months and proved satisfactory. More of these carts are being manufactured. The amount spent for repairs of carts during the year was Rs. 20,553-10-10.

233. Seven wheel troughs were constructed during the year. The trough is filled with water and the carts are allowed to pass through every time they leave and return to the depot. This keeps the wood-work of the wheels moist and prevents contraction with the result that the tire remains firm on the wheel during

hot weather. Self-closing ball-valve taps were put into the watering troughs of five of the depots. Some proved successful. There is a general improvement all round in the working of the depots, and credit is due to Mr. Shannon and his staff of Superintendents.

234. The total number of cart loads of rubbish removed during the year was

Removal of Rubbish. 283,565 against 241,803 in the previous year. Rubbish, whether combustible or incombustible, was speedily collected and rapidly removed to places of disposal. Two large motor lorries work in Georgetown. These lorries are very useful in carting away loads of refuse from the congested centre of the city to distant depositing places. As has already been stated, the introduction of motor lorries has brought about economy in labour, lessened the demand for more bullocks, minimised distances, reduced working hours, and afforded facilities for carts making repeated short trips. Platforms for direct tipping of carts into motor lorries are a most obvious necessity, but money considerations appear as usual to stand in the way.

235. There are only two large incinerators in the city one at DeMellow's Road and the other at Kistnampet. The various small incinerators must be abandoned in the near future according as the low-lying lands, &c., on which they are situated are filled up. Rapid conveyance of rubbish outside the city either by motor traction or by tramways is desirable if good conservancy is to be maintained. If the removal of rubbish by tramways is out of question on financial grounds, then the only other alternative is provision of more motor lorries.

236. The great bulk of the collected refuse was incinerated either in the two

Disposal of Rubbish. large incinerators or in the several small ones. The rest of the rubbish was dumped in rubbish depots and covered with layers of earth and side scrapings. The incinerators worked satisfactorily during the year. Dead rats and dogs destroyed in the Lethal Chambers were burnt in the furnace of the large incinerators.

237. Six small incinerators were constructed during the year making a total of 25 at work. The total quantity of mixed rubbish received and burned at the large and small incinerators amounted to 164,603 cart-loads. The resultant ash amounted to 20,659 cart-loads. With the ashes and screened earth from the small incinerators, 454,376 c.ft. of land were reclaimed. 154 cart-loads of earth and ash from the Kistnampet incinerator were sold to private parties and several cart-loads of earth are removed daily by the Malaria staff for reclamation purposes. Several thousand cart-loads of earth and ash are heaped up in mounds at the two large incinerators. These huge mounds interfere with the easy approach and exit of carts and restrict the space available for deposit of rubbish. Rapid removal of earth and ash from the incinerator is desirable, even as speedy removal of rubbish from the city limits. For this we have to fall back upon motor traction.

238. 181,381 cart-loads of filth were removed during the year as against

Removal of filth. 129,361 cart-loads in the previous year. Night-soil was removed from the Penitentiary in motor lorries. The old system of night conservancy in the 13th and 15th divisions with bullock carts was replaced by that with motor lorries. One bullock cart collects the night-soil

pails of several premises and stores them up at convenient places wherefrom the motor lorry removes them to the Ice House Road Pail depot. The cost of maintenance of the night-soil lorry during the year amounted to Rs. 2,234-5-10.

239. Night-soil from 1 to 9 Divisions is trenched in the Korukupet trenching depots, from 10 to 16 in the Brick-kiln Road trenching depot and night-soil from 17 to 20 Divisions is crushed, liquified and passed into sewers at the Ice House Road Pail depot. Of these two methods of disposal, the latter is preferable inasmuch as it obviates the abominable nuisance of a trenching ground in the midst of the city, producing myriads of dangerous flies—besides polluting the air and the soil right round the trenching area. Of the two trenching grounds, the one at Korukupet is fairly well away from the city boundary. The trenching ground at Brick-kiln Road, situated in the midst of residential quarters, is a menace to public health and should be abandoned.

240. The amount realised by the sale of manure from the two trenching grounds during 1915-16 is Rs. 19,384-13-0 against Rs. 16,957-14-10 in the previous year.

241. 177,529 cart-loads of silt, &c., were removed during the year against 108,701 in the previous year. Much supervision has been brought to bear upon drain cleaning. All the main drains were kept free of silt. Silt, side scrapings and sewage were deposited in rubbish depots or in low lands and tanks where the silt was spread out, dried and used for covering rubbish or for reclamation purposes. The tanks in Robinson Park, the Elephant tank in Ice House Road and several other tanks were profitably and economically filled up.

242. To maintain the sanitary condition of conserved streets and drains, and to minimise the pest of loathsome flies, many gallons of disinfectants were used during the year under report. The quantity and kind of disinfectant used is detailed below :—

393 gallons of Sanitas Okal.
40 gallons of Hydrocarbon.
51 gallons of Cyllin.
20 gallons of Izol.
24½ casks of Carbolic powder.
616 Parahs of chunam.

243. The amount realised by the supply of conservancy carts and coolies to private bodies under Sections 294 (b) and 295 of the Act was Rs. 8,533-15-6 against Rs. 7,007-3-7 in the previous year and the expenditure on labour under this head was 2,370-9-9 against 2,358-10-4 for 1914-15.

244. 42 boys were posted in the main public thoroughfares for the purpose of collecting and removing horse-dung, cowdung, papers, &c. These boys have worked well and the streets were kept tidy and clean.

245. During the year under report rigorous steps were taken to secure a proper condition of public latrines. Many latrines were repaired and put in working order. Six dry latrines were converted into flush-out ones. Sand was renewed in many of the sanded latrines. During the year, eight combined latrines were sanded with the sand taken by the motor lorries and thus a sum of about Rs. 1,500 was saved. The provision of Rs. 4,000 in the current budget for sanding latrines will not be necessary if motor lorries are used for taking sand to the latrines, when convenient.

246. Fly proof bins, so called, were removed and replaced by the ordinary Rubbish Bins. type of bins. All attempts in the past to ensure the proper use of public bins have proved futile. This led to controversy on the utility of providing public receptacles for refuse if the people will not use them. During the year under report dust-bins were removed in the South Range and the residents were directed by service of notice to provide domestic rubbish receptacles. There was much public opposition to this proposal, whereupon trials were made without bins in some streets and with bins at shorter intervals in certain areas. Both proving unsatisfactory, as a next measure bins were placed in streets where the residents took the responsibility of using them. Satisfactory results in conservancy cannot be attained unless people instal domestic rubbish bins. There are two types of private bins now in use ; these were designed by Dr. S. Isaac. One type consists of a masonry recess in the front verandah of a house fitted with two doors ; a movable metallic bin is placed in the recess. The other type is the intramural self-closing bin. It is suggested that the Corporation may with advantage insist on the provision of such bins when sanctioning plans for new constructions or reconstructions.

247. It is hoped that, with better wages to conservancy coolies, with provision of more cooly lines, with replacement of ill-paid slack Conclusion. peons by better paid maistries possessed of common sense and tact in the management of scavenger-labour, with the appointment of capable Superintendents under the Chief Officer of Conservancy for closer and stricter supervision, with the introduction of more motor vans or tramway service, with the undertaking of private scavenging by the Corporation, with the abolition of trenching grounds and institution of flushing-night-soil depots, with the willing provision of more private rubbish bins, and with increased interest of the people in the sanitary need for keeping the surroundings of their houses as clean as the houses themselves, the conservancy of the city will reach a standard which it has never attained before and the city will be rendered cleaner and sweeter.

(Sd.) C. SINGARAVELU,
1st Assistant Health Officer.



Self-closing intramural dust-bin as illustrated in the Tiffin room of the Ripon Buildings.

[The bin consists of a recess in a wall with two openings on the same side of the wall or on opposite side or at right angles with each other. The lower opening has an ordinary door, faces the street and is accessible for scavengers. It receives a wooden box lined inside with tin for the reception of rubbish. The upper opening is intended for throwing rubbish in and has a door opened by a foot-level arrangement. The door has two lateral flaps so weighted that the door shuts automatically. The bin may be inserted in a wall, parapet wall or a pial. Several of them have been installed in Madras and found to give satisfaction. In it all objections raised against private rubbish bins have been met with successfully. It costs between Rs. 10 to Rs. 15.]

VACCINATION.

248. Madras is divided into ten vaccination districts each under a vaccinator who, according to the reorganization effected in 1913, must possess a certificate of having qualified for the Sub-Assistant Surgeon test. Each Medical Vaccinator has an assistant under him whose chief duty is to trace out unprotected children and notify for their being vaccinated.

249. The Egmore, Washermanpet and Royapuram districts have two vaccine stations each and in each of the remaining seven districts there is only one station. Vaccination is done free of charge on two or three days in the week. Every vaccinated child must be brought to the same station next week for inspection by the Assistant Health Officer or the Health Officer when the results of vaccination are verified. The Medical Vaccinators maintain a record of all births in their districts in which the date of vaccination of each Madras child is noted against its name and notices are served against the rest as soon as they reach the age of six months. In the case of mofussal births reported, they are traced to their addresses and notified; and wherever unprotected children are found, no attempts are spared to bring pressure for their being vaccinated.

The vaccine for the operation is obtained from King Institute, Guindy.

250. The total number of cases vaccinated by the Corporation staff during the calendar year, excluding secondary vaccinations, was **Total cases for the year.** 27,229 against 28,277 in 1914, showing a decrease of 1,048 cases. This decrease is due to less number of vaccinations performed outside the vaccination depots by the Medical Vaccinators who were restrained from performing such outside vaccinations as much as possible, the Assistant Health Officers finding it difficult to verify the result of vaccination in those cases. Of the total number vaccinated, 21,405 were successful and 3,255 unsuccessful. In the remaining 2,569 cases, the results could not be verified and are shown as "unknown."

251. Including the vaccinations performed in the Penitentiary (710) and at the Fiji Government Emigration Depot (2,051) the total number of primary vaccinations and re-vaccinations in the City was 29,990—18,278 males and 11,712 females—against 29,880 in the previous year showing an increase of 110. Of the total, 22,704 or 75.70 *per cent.* were successful and 4,539 or 15.13 *per cent.* were unsuccessful. The remaining 2,747 were returned as "unknown."

252. Of the 27,229 cases vaccinated by the Corporation staff, 21,179 were vaccinated in the depots and 6,050 in the divisions. Of the 21,179 cases vaccinated at the depots, 16,660 were primary and 4,519 re-vaccinations. In the case of the former, notices were served, according to the by-laws, on the parents or guardians to produce the children for verifications of results at the depots and 17,472 were so produced against 8,721 in the previous year showing an increase of 8,751. This large increase is the effect of the strict enforcement of By-law 229.

(1) under Section 409 (26) of the Madras City Municipal Act, making the attendance of vaccinated children at the depots for verification compulsory. The cases vaccinated outside the depots were operations confined to the poorer classes located in Paracharries, Hutting Grounds and Kuppams and to the floating population who could not be compelled to attend the depots.

253. The total number of cases verified by the Assistant Health Officers was 8,870 against 457 in the previous year. This large increase in the number of verifications has, as already been pointed out, is due to the strict enforcement of By-law 229 (1) compelling the attendance of the vaccinated children at the depots for verification, and to the division of the supervision of vaccination work between two Assistant Health Officers instead of one since the commencement of August.

254. The percentage of success obtaining in primary and secondary vaccinations and in re-vaccinations, excluding the unknown
Percentage of success. from the total, was 96.31 and 56.80 respectively against 98.59 and 53.63 in 1914.

A comparison of the work performed in the several vaccination depots shows that Vepery Depot has the highest total with 4,264 cases. The highest percentage of success, *viz.*, 92.95, was obtained in the Mylapore Depot.

255. Out of 29,990 cases vaccinated, 19,428 were primary and 10,562 were revaccinations. In 637 of these re-vaccinations, a reward of four annas each, sanctioned in G.O., No. 149-M., dated 5th February 1909 was paid. A register was maintained showing the names and addresses of all persons to whom such rewards were paid and these people were mainly inhabitants of localities where Small-pox broke out. The rewards were paid by the Assistant Health Officers in person.

256. Vaccinations among children under one year numbered 16,442 including 19 in the Fiji Government Emigration Depot against
Children under one year of age. 19,696 in the previous year showing a decrease of 3,254 cases. The percentage of success among these, excluding the unknown from the total, was 96.40 against 98.73 in 1914. Of the total number of children vaccinated by the Corporation staff, 10,400 were born in Madras and 6,023 in the mofussal. The number of children under one year vaccinated was 31.70 *per mille* of the population, compared with 37.94 in 1914. The number successfully vaccinated was 29.60 *per mille* against 36.68 in 1914.

257. The total number of births verified was 14,874. Of these, 3,375 children died during the year ; 2,631 were reported to have
Verification of births. permanently left the city (for 1914 it was 2,639) and 507 were not traceable at the addresses given in the birth counterfoils (698 in the year 1914). Of the remaining 8,361, the number vaccinated was 7,468. Vaccination was postponed on medical certificates in 196 cases. 308 were found sick by the vaccination staff (compared with 421 for 1914) and 271 had temporarily left the City (compared with 168 in 1914). The remaining 118 children were found

healthy and the parents were warned to have them vaccinated without delay. The system of making enquiries to find out whether children born in the city and removed out of it before vaccination were vaccinated outside, was continued as usual during the year under report and resulted in the vaccination of 132 cases. The results of such cases were noted in the registers.

258. Hospital births numbering 3,394 were verified. Of these, 569 children

Hospital Births. died during the year ; 494 were reported to have permanently left the City and 1,265 were not traceable at the addresses given in the birth counterfoils, leaving 1,066 available for vaccination. Of these, 972 were vaccinated. Vaccination was postponed under medical certificates in the case of 27 children, 25 were found sick by the vaccination staff and 25 temporarily left the City. The remaining 17 children were found healthy and the parents were warned. The large number of untraced cases among hospital births is due in many instances to the insufficient and incorrect addresses furnished by the hospital authorities, but this is very probably due to parents and friends themselves giving erroneous information.

259. The attached vaccination statement I furnishes information as to the number of children born in the City in 1915, who were vaccinated before they attained the age of one year.

260. Out of 29,990 cases vaccinated, 3,031 were Europeans, Anglo-Indians and Indian Christians, 2,793 were Muhammadans, 24,086

Analysis of totals according to race. were Hindus and 80, other classes. For every 1,000 of the population according to the census of 1911, 57.82 were vaccinated. The vaccination of "Europeans, Anglo-Indians and Indian Christians" was proportionately larger than that of any other class, the number vaccinated being 7.24 *per cent.* of their population, while the percentage among the Hindus was 5.79 *per cent.* among Muhammadans 4.72 *per cent.* and among "other classes" 4.52 *per cent.*

261. There were 314 attacks and 92 deaths from small-pox during the year against 146 attacks and 66 deaths in the previous year. In 25 of these attacks, information as to their vaccination state was not furnished as they were reported after death by the Hospital authorities. Of the remaining 289 attacks, 150 were amongst children under 12 years of age of whom 80 were vaccinated in infancy and 70 were not vaccinated. Of the vaccinated, 13 died and of the unvaccinated, 36. The remaining 139 attacks were among persons over 12 years of age. Of these, 107 were vaccinated in infancy and 32 had never been vaccinated. 12 proved fatal among the vaccinated and six among the unvaccinated.

262. The following table is a statement of attacks and deaths from small-pox among the vaccinated and the unvaccinated at the various

Attacks and Deaths from Small-pox. age periods exclusive of the 25 cases in which the vaccination state was not known :—

	VACCINATED		UNVACCINATED.	
	Attacks.	Deaths.	Attacks.	Deaths.
Under one year	2	1	22 15
Above one year and under five years	...	21	8	31 16
Above five years and under ten years	...	34	2	14 5
Above ten years and under 12 years	...	23	2	3 ...
Above 12 years and under 15 years	...	20	...	4 1
Above 15 years and under 20 years	...	22	4	9 2
Above 20 years and under 25 years	...	29	1	6 1
Above 25 years	36	7	13 2
	Total ...	187	25	102 42

Note.—Case mortality in the vaccinated 13.37

Do. unvaccinated 41.17

Admission to Isolation Hospital. 263. Information as to the vaccinal condition of small-pox patients admitted into the Corporation Hospitals during the calendar year 1915 is hereunder furnished.

(1) *Krishnampet Isolation Hospital.*—There was one case of small-pox remaining on 1st January and 122 were admitted during the year, making a total of 123. Of these, 111 were protected and 12 were unprotected. There was no death among the protected cases while there were 8 deaths among the unprotected.

(2) *Native Infirmary* :—Of the 11 cases admitted into the Native Infirmary, 9 were protected and the remaining 2 were unprotected. There were no deaths among the protected but both the unprotected died.

Prosecutions. 264. The total number of prosecutions instituted during the year under report was 243 against 76 in 1914. The fines imposed amounted to Rs. 100-4-0 against Rs. 43-12-0 in the previous year. In 71 of these cases, prosecution was for failure to have children vaccinated with the result that all of them were subsequently vaccinated. In the remaining 172 cases, prosecutions were for not bringing children for verification.

Fees. 265. The fees charged for primary vaccinations at private residences under by-law 233, amounted to Rs. 183-12-0. The amount was collected and credited to the Corporation.

Total cost of vaccination. 266. The cost of vaccination was Rs. 14,301-4-9. If the amount realized by vaccination at private residences is deducted, the net expenditure amounts to Rs. 14,117-8-9. The net cost of each successful vaccination was 10 annas 6 pies against 9 annas 3 pies in the previous year.

Vaccination Statement I showing the number of births registered during the calendar year 1915 and the number of vaccination of infants under one year of age.

Division.	Total births excluding still-births.	Still-births.	Deaths under one year.	Number of infants surviving.	Number of infants vaccinated under one year among Madras births.	Percentage of vaccination to births registered.	Remarks.
1	2	3	4	5	6	7	8
1	660 140	12 9	138 16	522 124	313 73	47.42 52.14	
2	1,172 264	25 26	292 41	880 223	536 52	45.73 19.69	
3	404 84	8 6	152 16	252 68	156 12	38.61 34.29	
4	355 63	8 3	86 7	269 56	124 32	34.93 50.79	
5	476 100	10 5	127 11	349 89	227 19	47.68 19.00	
6	578 201	10 10	142 13	436 188	204 17	35.29 8.45	
7	978 205	1 2	244 37	734 168	561 65	57.36 31.71	
8	652 108	21 8	155 11	497 97	323 58	49.54 53.70	
9	462 86	62 9	74 2	388 84	231 35	50.00 40.69	
10	845	31	214	631	550	65.08	

11	1,346 196	38 3	324 29	1,022 167	689 94	51.18 47.96	
12	699 241	57 3	103 25	596 216	404 56	57.79 23.23	
13	557 397	24 35	108 26	449 371	355 92	63.73 23.17	
14	275 120	24 2	44 12	231 108	180 28	65.45 23.03	
15	323 162	26 4	41 15	282 147	205 56	63.46 34.56	
16	812 173	13 12	231 15	581 158	452 47	55.66 27.16	
17	1,249 279	41 8	266 47	983 232	581 34	46.51 12.18	
18	1,087 130	26 15	244 30	843 100	437 41	40.20 31.53	
19	950 195	20 12	231 45	719 150	558 104	55.73 53.33	
20	800 125	16 7	162 30	638 95	374 56	46.74 44.8	
Total.	14,680 3,269	473 179	3,378 428	11,302 2,841	7,460 971	50.81 29.70	

N. B.—The antique figures denote Hospital births.

Vaccination Statement II showing the number of births registered in 1915 and the number of infants vaccinated under one year of age.

Year.	Total number of births excluding still-births.	Number of children in column 2, who died before attaining the age of one year, and without being vaccinated.	Number of children in column 2, who left the city before attaining the age of one year, and without being vaccinated.	Number of children in column 2, who were available for vaccination (col. 2 minus 3 and 4).	Number of children in column 5, who were vaccinated before they attained the age of one year.	Percentage of column 6 to column 5.	Number of children in column 5, whose vaccination was postponed beyond one year of age for medical reasons.	70
1	2	3	4	5	6	7	8	
1912-13	16,063	4,057	2,492	9,514	7,146	75.11	360	
	2,770	400	922	1,448	672	46.41	25	
1914	15,440	3,381	2,775	9,284	7,739	83.35	496	
	1,607	178	489	940	494	52.55	20	
1915	14,680	3,378	2,513	8,789	7,460	84.87	355	
	3,269	428	789	971	47.32	24		

N.B. — The antique figures denote Hospital births.

Vaccination Statement III showing the number of prosecutions
instituted in the Vaccination Department during the calendar year 1915.

Number of Section of Act.	Nature of charge.	Number of cases instituted.	Number discharged.	Otherwise.	Number convicted.	Total fine inflicted.
1	2	3	4	5	6	7
Under Section 409 of Act III of 1904.	(1) For not bringing children to be vaccinated after notice ...	71	12	15	44	54 4 0
	(2) For not bringing children for verifications ...	172	18	29	125	46 0 0

Vaccination Statement IV showing the particulars of primary vaccination with different kinds of lymph during the calendar year 1915.

—	Total number of operations.	Successful.	Unknown.	Percentage of success.
1	2	3	4	5
1. Calf Lymph ...	...	...	...	...
2. Glycerine Lymph ...	1 ^o ,428	18,109	641	93.21

Vaccination Statement V showing particulars of Vaccination during the year ending 31st December 1915.

Old division.	Wards.	Population.	Number of depots in each district.	Number of Vaccinators in each district.	Average number of persons vaccinated.	Total number of persons vaccinated.	Primary Vaccinations.		Successful.		Unsuccessful.		Primary.		Re-vaccinations.		Percentage of successful cases in which the results were known.		Persons successfully vaccinated per 1,000 of population.		Ratio per 1,000 of population.		Average annual number of persons successfully vaccinated during previous five years.		Average annual number of deaths from small-pox during previous five years.		Average cost of each successful vaccination.			
							Total.	Females.	Total.	Females.	Total.	Females.	Total.	Females.	Total.	Females.	Total.	Females.	Total.	Females.	Total.	Females.	Total.	Females.	Total.	Females.	Total.	Females.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29		
1	East Ward	1	20,318	1	1,040	660	17,00	410	426	836	586	1,63	...	749	30	864	410	280	92-92	70-20	57-64	1,185	58-32	20	0-9	0-4	0-2	0-2		
1	Centre	2	40,635	1	1,086	730	1,816	797	708	1,505	1,165	210	4	1,379	99	311	87	120	98-07	45-54	36-07	1,827	44-96	17	0-4	0-2	0-2	0-2		
1	West	3	15,120	1	232	278	510	116	245	361	209	93	2	304	35	149	24	68	93-25	29-62	21-93	841	55-62	3	0-2	0-2	0-2	0-2		
2	East Ward	4	14,564	1	1	686	284	970	228	183	411	265	131	2	398	12	559	122	50	99-74	23-96	35-70	1,209	83-01	5	0-3	0-6	0-6	0-3	
2	Centre	5	19,179	1	1	512	570	1,082	374	390	764	579	139	5	723	40	318	68	45	99-86	24-90	41-24	585	30-50	12	0-6	0-6	0-6	0-3	
2	West	6	22,473	...	...	603	552	1,155	531	509	1,040	792	181	9	982	39	115	24	31	98-10	28-57	44-76	492	21-89	7	0-3	0-3	0-3	0-3
3	North Ward	7	37,065	1	1	1,113	833	1,946	734	792	1,526	1,227	178	4	1,409	32	420	175	40	94-31	46-05	42-73	1,372	37-01	13	0-4	0-6	0-6	0-4	
3	Centre	8	28,585	1	1	793	666	1,459	614	635	1,249	772	215	...	987	156	210	62	104	90-30	49-05	36-34	1,036	36-24	15	0-6	0-6	0-6	0-4	
3	South	9	20,937	...	...	247	196	443	167	176	343	203	75	...	278	40	160	19	16	91-74	22-61	14-18	674	32-19	8	0-4	0-4	0-4	0-4
4	"	"	10	24,979	1	...	1,351	545	1,896	556	523	1,079	917	4	1,030	17	817	531	181	96-98	83-49	62-49	1,536	61-49	1	0-04	0-04	0-04	0-04	
5	North Ward	11	41,523	1	1	1,268	828	2,096	704	692	1,396	1,183	148	9	1,335	25	700	342	100	97-37	57-00	40-38	2,145	51-65	7	0-2	0-2	0-2	0-2	
5	Centre	12	29,776	1	1	1,022	741	1,763	734	603	1,337	1,163	87	...	1,250	23	426	110	195	95-12	47-61	45-67	1,904	63-94	4	0-2	0-2	0-2	0-2	
5	South	13	23,717	...	...	1,033	707	1,730	580	499	1,079	923	138	...	1,061	3	651	36	126	98-60	75-42	61-43	1,116	47-05	7	0-3	0-3	0-3	0-3
6	North Ward	14	11,751	1	1	444	299	743	348	285	633	556	38	...	594	9	116	8	81	95-19	27-58	51-22	699	59-48	3	0-2	0-2	0-2	0-2	
6	South	15	15,180	1	1	...	393	340	733	303	304	607	526	34	1	561	13	126	5	89	91-44	13-51	37-28	883	58-16	7	0-4	0-4	0-4	0-4
7	North Ward	16	26,752	1	1	1,064	653	1,717	651	526	1,177	1,018	126	...	1,154	3	540	280	129	98-29	68-12	53-60	1,597	59-69	8	0-3	0-4	0-4	0-3	
7	Centre	17	38,643	1	1	901	534	1,435	578	513	1,091	899	116	5	1,020	27	344	106	109	95-85	45-10	29-13	1,512	39-12	14	0-4	0-4	0-4	0-3	
7	South	18	32,851	...	...	967	625	1,592	523	572	1,095	941	104	3	1,048	14	497	154	141	96-94	43-62	36-58	1,346	40-97	13	0-4	0-4	0-4	0-3
8	North Ward	19	34,358	1	1	692	618	1,310	480	457	937	800	108	2	910	10	373	277	17	98-16	77-80	34-54	1,069	31-11	10	0-3	0-3	0-3	0-2	
8	West	20	20,254	...	...	600	533	1,133	398	462	860	617	226	...	843	7	273	200	10	98-82	76-04	51-49	842	41-57	4	0-2	0-2	0-2	0-2
Total	...	518,660	14	10	16,037	11,192	27,229	9,826	9,500	19,326	15,341	2,624	50	18,015	634	7903	3390	1935	96-37	56-80	38-46	23,870	46-02	178	0-3	0-3	0-3	0-3		

PLAQUE.

267. Plague measures were administered wholly by the 2nd Assistant Health Officer till 3rd August 1915, after which the North Range work of the section was administered by the 3rd Assistant Health Officer and that of the South Range by the 2nd Assistant Health Officer under the supervision of the Health Officer.

268. The administration of this section may be divided into three main parts, (1) inspection of vessels arriving at the port and issue of notification and pratique for passengers. This is done under the supervision of the Port Health Officer ; (2) observation and verification of arrivals from plague infected areas under the new notification system ; and (3) rat destruction.

Port Health Officer's Report.

269. (1) The Port Health Officer reports as follows:—

239 incoming vessels with a crew of 23,787 and 67,610 passengers (out of whom 49,387 landed here) were inspected for plague purposes during the year, against 304 vessels 26,050 crew and 46,406 passengers of the previous year. 170 outgoing vessels with 17,318 crew and 37,308 passengers were granted bills of health during the year, against 188 vessels with 19,402 crew and 21,070 passengers of the previous year. The fall in the number of vessels inspected was due partly to the plague restrictions having been withdrawn against the port of Calcutta during the last quarter of the year. As usual, the saloon passengers were granted notification papers and the deck passengers had their bedding and clothing disinfected before they were allowed to go ashore. The number of notification papers issued at the Madras Harbour is as follows :—

City	...	...	943
Moffussal	...	...	623
<hr/>			
Total	...	1,566	
<hr/>			

Five cases of small-pox and two of chicken-pox were found among the passengers landed at the Harbour and were removed to the Isolation Hospital at Kistnampet. Three cases of chicken-pox and two contacts from among the return emigrants were sent to the Fiji Emigration Depot.

Observation or inspection of arrivals from plague infected areas.

270. Ten Plague Inspectors and six Plague nurses continued to work during the whole year.

271. No case of plague occurred in the city during the year. 50,123 triplicate copies of plague notifications were received from the several notification issuing stations. Of this, only 41,582 were traced to the parties answering to

them. 17.04 per cent. were not traceable as against 33.44 per cent. in the previous year from June to December when the new system began working.

272. 178 prosecutions were launched during the year as the parties failed to comply with the instructions given on the notification paper of which 117 were convicted and fined and the rest were either acquitted or the cases withdrawn on the plea of their compliance with the instructions, or of the non-appearance of the parties.

273. The new system although a great convenience to the notification-holder is a real handicap to the municipal subordinates. Under this system it devolves upon the Corporation to keep a watch over new arrivals from plague infected areas. The traveller has no doubt under these rules to notify his arrival and report any case of suspicious sickness or rat-fall in the house within one month of his arrival. For various reasons such as wrong, or misleading, or absence of any address of the residence of the travellers and illegible entries, a certain number of these go untraced. In a number of cases the travellers fail to deliver the notifications to the Health Officer or depart from the station leaving no instructions to this office as was in the case in the passport days. Under the old passport rules the onus of reporting sickness rested with the house-holder, medical practitioners and local authorities under various sections of the Plague Regulations, but under the new "notification system" this responsibility is thrown upon the owner. The form is as follows :—

“ I son of aged years,
caste residing in village
taluk district, proceeding to
do hereby bind myself to deliver this notification to the local authority of that
place on my arrival and to report to him any case of fever or plague or suspicious
sudden illness or any unusual mortality among rats in the house occupied by me
within a period of one month after my arrival.”

In view of the text of this notification the authorities will have to be content to receive information from persons after their arrival at an ultimate destination and not much importance is attached to the condition of houses visited by the apparently healthy travellers *en route* from place to place as under the old ruling.

274. The expenditure on plague is defrayed by the Corporation and an amount of Rs. 17,648-3-9 was spent for the calendar year, 1915.

275. This work was under the supervision of the Special Plague Medical Officer. On 1st April 1915, the office of the Special Plague Medical Officer which was held in a rented house in Poonamallee High Road was removed to a portion of the building of the Special Engineer's Office in Napier Park as the former house was required by the owner. The rat destruction work in the harbour also was supervised by the Special Plague Medical Officer.

276. The number of rats caught during the year was 133,970 as against 123,389 in the previous year thus bringing up the grand total to 1,960,944 from the beginning of the operations. Daily examination of the smears from the spleens of rats did not reveal the presence of *Bacillus Pestis* in any.

277. Under the requisition of the senior member, Plague Research Commission, Bombay, live rats were sent to Bombay every week and during the year under review 6,043 rats were sent *per* rail. The cost of this was met from Plague Research funds.

278. The total amount spent for plague measures, or rather, anti-plague measures is Rs. 26,926-14-4 of which, an amount of **Expenditure.** Rs. 9,278-10-7 was met from provincial funds constituting the pay of the Special Plague Medical Officer and his one attendant and the establishment under the Port Health Officer. The total cost for rat destruction only was Rs. 6,106-15-7 which includes the reward of 3 pies or $\frac{1}{4}$ anna for each rat destroyed. This works to nearly $8\frac{4}{5}$ pies *per* rat destroyed.

K. RAGHAVENDRA RAU,
Ag. Health Officer.

ANNUAL FORM No. A.—METEOROLOGICAL DATA—MADRAS.

LATITUDE $13^{\circ} 4' N.$ LONGITUDE $80^{\circ} 15' E.$

Barometer.	Reading of Thermometer.						Prevailing direction of wind.	Number of days on which rain fell.	Total fall of rain during month.	Maximum fall of rain during 24 hours.	Inches.		
	Dry.	Mean daily range.	Mean daily range.	Dew point.	Mean daily value.	Mean daily value.							
MONTHS.	Mean daily reading.	Maximum.	Minimum.	Mean daily value.	Mean daily value.	Mean daily value.							
January	1915.	84.1	69.9	14.2	76.3	68.8	146.5	7.5	80	N.E.	8	9.61	6.69
February	"	86.7	71.1	15.6	78.5	69.5	149.7	9.0	77	E. by N.	1	0.30	0.30
March	"	90.3	74.2	16.1	81.8	72.9	153.5	8.9	77	S. E. by E.	2	0.24	0.23
April	"	93.5	77.5	16.0	84.7	75.1	154.8	9.6	76	S. E. by S.	3	0.52	0.43
May	"	101.8	82.6	19.2	89.6	74.3	153.2	15.3	65	South.	2	0.36	0.34
June	"	98.3	82.6	15.7	88.2	74.1	146.6	14.1	67	S. by W.	8	1.31	0.58
July	"	94.2	78.7	15.5	84.7	74.1	144.2	10.6	74	S. W. by S.	11	8.80	3.26
August	"	95.5	79.1	16.4	85.4	73.4	148.5	12.0	72	S. S. W.	11	1.20	0.37
September	"	92.9	77.4	15.5	83.8	73.8	150.9	10.0	76	S. by E.	14	10.48	4.15
October	"	91.9	77.0	14.9	83.5	74.4	152.5	9.1	78	S. by E.	10	2.64	1.42
November	"	86.0	74.0	12.0	79.1	73.0	138.6	6.1	85	N.E.	18	20.79	3.18
December	"	84.4	69.9	14.5	76.3	65.9	145.4	10.4	74	N. N. E.	4	0.41	0.15

Annual Form No. 1.—Births registered by Wards during the year 1915.

1	2	3	4			5	6	7	8	9	10	11
			Population according to Census of 1911.									
Wards.	Corresponding old Divisions.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.
1	East Ward	..	1	9,768	10,550	20,318	461	873	472	391	43.0	111.9
2	Centre ,,	..	20,396	20,239	40,635	748	715	36.7	35.3	36.0	104.6	40.5
3	West ,,	..	7,820	7,300	15,120	198	195	25.3	25.3	26.0	101.5	36.1
4	East Ward	..	3	8,557	6,007	14,564	226	196	422	26.4	32.6	115.3
5	Centre ,,	..	10,132	9,047	19,179	327	276	603	32.3	30.5	31.4	118.5
6	West ,,	..	12,027	10,146	22,473	372	326	698	30.9	31.2	31.1	114.1
7	North Ward	..	2	18,410	1,8655	37,065	602	552	32.7	29.6	31.1	109.1
8	Centre ,,	..	14,887	13,698	28,585	375	381	25.2	27.8	26.4	98.4	5.2
9	South ,,	..	11,210	9,727	20,937	290	304	594	31.3	28.4	95.4	11.5
10	4th Division	..	4	13,137	11,842	24,979	472	462	934	35.9	39.0	37.4
11	North Ward	..	5	21,157	20,366	41,523	779	815	1,594	36.8	40.0	38.4
12	Centre ,,	..	15,172	14,604	29,776	537	497	1,034	35.4	34.0	34.7	108.0
13	South ,,	..	12,430	11,287	23,717	521	484	1,015	41.9	42.9	42.4	107.6
14	North Ward	..	6	6,216	5,535	11,751	213	177	390	34.3	33.0	34.7
15	South ,,	..	7	7,622	7,558	15,180	282	245	527	32.4	32.4	34.7
16	North Ward	..	7	13,601	13,151	26,752	589	502	1,091	43.3	38.2	40.8
17	Centre ,,	..	19,636	19,067	38,643	773	746	1,519	39.4	39.2	39.3	117.3
18	South ,,	..	16,724	16,127	32,851	6.1	592	1,203	36.5	36.7	36.6	103.6
19	East Ward	..	8	16,998	17,360	34,358	658	646	1,304	38.7	37.2	38.0
20	West ,,	..	10,565	9,689	20,254	384	390	774	36.3	40.3	38.2	98.5
	Total	..		266,465	252,195	518,660	9,418	8,93	18,331	35.3	35.3	35.3
										0.7	37.3	37.4
											650	951

* Included in the total Number of Births shown in column No. 4.

Annual Form No. II.—Statement of Deaths by Wards during the year 1915.

Wards.	Present Divisions.	Area in Square Miles.	Average Population per Square Mile.	Population according to Census of 1911.	Number of Deaths Registered.		Deaths per 1,000 of Population from	Mean ratio of Deaths per 1000 during previous five years.	8		9	
					Males.	Females.			Total.	Males.	Females.	Total.
1 East Ward	1	0.92	22,085	9,768	10,550	20,318	394	769	95.2	0.2	0.7	16.5
2 Centre „		1.36	29,879	20,396	40,635	419	831	1,785	113.3	0.1	0.5	20.5
3 West „		3.03	4,990	7,820	15,120	411	411	830	101.9	0.1	0.5	11.4
4 East Ward	2	0.55	26,480	8,557	6,007	14,564	211	475	125.1	...	2.7	1.4
5 Centre „		0.21	91,329	10,132	9,047	19,179	294	587	100.3	0.1	0.3	3.3
6 West „		0.24	93,639	12,027	10,446	22,473	375	749	100.3	0.04	0.09	0.6
7 North Ward	3	0.42	88,250	18,410	18,655	37,065	644	719	1,363	0.05	0.03	0.2
8 Centre „		0.24	119,104	14,887	13,698	28,585	443	924	92.1	0.1	0.03	0.07
9 South „		0.36	58,158	11,210	9,727	20,937	476	359	83.5	0.05	0.02	0.07
10 4th Division	4	3.88	6,438	13,137	11,842	24,979	521	459	980	113.5	0.04	0.03
11 North Ward	5	0.70	59,319	21,157	20,366	41,523	686	727	1,413	0.2	0.02	0.4
12 Centre „		0.95	31,343	15,172	14,604	29,776	481	436	917	110.3	0.07	0.03
13 South „		1.16	20,446	12,430	11,287	23,717	358	370	728	0.2	0.3	0.6
14 North Ward	6	2.40	4,896	6,216	5,535	11,751	206	204	410	101.0	0.09	0.09
15 South „		1.76	8,625	7,622	7,558	15,180	265	227	482	112.3	0.2	0.2
16 North Ward	7	0.36	74,311	13,601	13,151	26,752	472	451	923	104.7	0.04	0.04
17 Centre „		1.83	21,116	19,636	19,007	38,643	700	787	1,487	88.9	0.1	0.5
18 South „		0.72	45,626	16,724	16,127	32,851	576	635	1,211	90.7	0.3	0.4
19 East Ward	8	2.64	13,014	16,998	17,360	34,358	591	640	1,231	92.3	0.5	0.09
20 West „		3.90	5,193	10,565	9,689	20,254	280	309	589	90.6	0.1	0.1
Total ...		27.6	18,792	266,465	252,195	518,660	9,364	9,324	18,688	100.4	0.07	0.2
							3.3	0.1	3.3	0.2	...	3.3
							1.1	1.1	1.1	1.1	1.1	1.1
							16.8	16.8	16.8	16.8	16.8	16.8
							35.1	35.1	35.1	35.1	35.1	35.1
							40.3	40.3	40.3	40.3	40.3	40.3
							42.4	42.4	42.4	42.4	42.4	42.4
							41.3	41.3	41.3	41.3	41.3	41.3

Annual Form No. III.—Deaths registered by Wards during each month of the year 1915.

1	2	Wards.	Present Divisions.	Corresponding old Divisions.	3												4
					January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Deaths registered during the year.
1	2	East Ward	...	1	66	46	97	41	57	52	53	81	99	61	51	65	769
2	Centre " "	Centre " "	...	1	197	152	208	111	103	133	151	124	209	123	104	170	1,785
3	West " "	West " "	...	1	92	92	112	108	64	46	41	78	53	56	40	48	830
4	East Ward	East Ward	...	2	41	26	51	38	29	40	45	53	52	26	29	46	475
5	Centre " "	Centre " "	...	3	60	60	61	50	40	39	40	37	56	41	43	60	587
6	West " "	West " "	...	3	62	71	80	71	47	65	57	63	61	48	51	73	749
7	North Ward	North Ward	...	2	144	120	169	100	89	92	73	117	141	99	68	151	1,363
8	Centre " "	Centre " "	...	2	96	83	84	65	63	81	58	69	109	66	65	85	924
9	South " "	South " "	...	2	67	78	67	55	67	75	81	44	80	56	65	100	835
10	4th Division	4th Division	...	4	130	103	99	73	79	77	63	71	87	61	61	76	980
11	North Ward	North Ward	...	5	125	109	158	97	105	106	101	136	161	89	95	131	1,413
12	Centre " "	Centre " "	...	5	74	66	86	61	79	84	75	86	92	73	60	81	917
13	South " "	South " "	...	5	73	49	37	67	65	55	57	63	83	61	61	57	728
14	North Ward	North Ward	...	6	40	29	38	33	33	38	27	44	42	24	26	36	410
15	South " "	South " "	...	6	33	31	46	37	33	39	37	59	49	46	31	41	482
16	North Ward	North Ward	...	7	69	66	83	67	65	71	79	75	89	87	54	118	923
17	Centre " "	Centre " "	...	7	126	118	117	111	118	116	126	124	156	113	113	187	1,487
18	South " "	South " "	...	7	112	85	111	91	78	110	97	107	140	89	73	118	1,211
19	East Ward	East Ward	...	8	103	94	134	88	94	112	98	121	94	88	50	107	1,231
20	West " "	West " "	...	8	34	42	59	45	46	35	70	58	43	50	43	59	589
...	Total	...	...	...	1,744	1,520	1,927	1,379	1,366	1,465	1,381	1,626	1,938	1,362	1,221	1,759	18,688

Annual Form No. IV.—Deaths registered according to Age by Wards during the year 1915.

1	2	3		4		5		6		7		8		9		10		11		12		
		Under 1 Year.		1 Year and under 5 Years.		5 Years and under 10 Years.		10 Years and under 15 Years.		15 Years and under 20 Years.		20 Years and under 30 Years.		30 Years and under 40 Years.		40 Years and under 50 Years.		50 Years and under 60 Years.		60 Years and upwards.		
		Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
1	East Ward	...	...	139	115	67	55	25	9	11	6	12	28	34	20	31	16	17	24	10	51	74
2	Centre "	...	...	280	200	125	135	32	37	24	22	29	27	75	86	64	73	51	81	55	164	151
3	West "	...	...	79	81	59	63	29	17	6	12	11	16	33	38	43	29	41	28	42	27	100
4	East Ward	...	...	74	43	36	34	13	6	3	4	9	4	13	26	25	23	34	15	19	12	38
5	Centre "	...	...	94	70	39	45	7	9	2	10	7	11	23	33	21	25	18	18	33	22	44
6	West "	...	...	104	85	42	51	10	9	8	10	9	12	38	48	35	31	24	31	26	27	83
7	North Ward	...	...	216	181	72	84	27	24	11	8	14	36	50	69	40	56	65	43	49	50	168
8	Centre "	...	...	142	116	38	47	20	11	5	8	10	14	39	60	35	45	36	34	35	47	99
9	South "	...	...	113	84	45	49	19	20	7	4	19	25	55	35	56	25	51	29	45	28	60
10	4th Division	...	...	168	114	101	84	19	26	9	14	16	15	27	41	28	36	28	19	37	27	83
11	North Ward	...	...	215	216	105	107	31	26	13	17	19	38	43	56	43	47	54	36	32	44	140
12	Centre "	...	...	147	128	81	67	16	18	9	10	13	17	29	36	35	33	47	19	33	27	81
13	South "	...	...	118	97	56	67	17	14	6	4	5	17	22	36	21	27	25	23	23	20	65
14	North Ward	...	...	6	52	34	27	31	8	11	2	7	5	8	20	14	23	22	20	17	11	32
15	South "	...	...	70	55	44	37	7	5	2	6	5	11	22	21	17	14	15	11	13	11	56
16	North Ward	...	...	171	132	83	75	8	15	10	3	8	24	44	51	25	27	26	22	24	14	73
17	Centre "	...	...	216	209	100	113	30	35	11	20	16	35	60	84	35	57	40	38	41	36	160
18	South "	...	...	187	185	93	89	23	16	15	16	15	20	41	66	37	39	34	32	43	37	135
19	East Ward	...	...	8	179	152	83	104	26	28	14	18	19	25	37	68	39	54	36	34	45	128
20	West "	...	...	95	88	61	54	8	16	6	3	10	6	10	25	15	23	13	13	18	13	68
	Total...			2,859	2,385	1,347	1,401	365	368	172	207	245	373	709	927	657	710	704	528	680	547	1,878
	* Ratio per 1,000...			303 6	267.6	62.0	63.2	12.7	12.7	6.2	8.2	9.8	14.4	13.1	19.6	16.0	19.1	22.8	19.7	38.3	33.3	123.4
	...			...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	146.8

* In the case of children under one year of age the rates are calculated on the number of births during the year ; in all other cases on the numbers living at the time of the Census.

Annual Form No. V.—Deaths registered according to Class by Wards during the year 1915.

Present Divisions.	Wards.	Old Corresponding Divisions.	Population (according to Census of 1911).	Number of deaths registered.				Ratio of deaths per 1,000 of Population.
				Christians.	Hindus.	Mahomedans.	Total.	
1	East Ward	1	5,271	13,976	56	159	30·2	37·8
2	Centre ”	1,151	36,276	3,196	12	39·1	43·4	43·9
3	West ”	327	12,502	2,193	98	15·1	5·3·5	54·9
4	East Ward	2,672	9,199	4,771	54	201	14·8	32·6
5	Centre ”	15,477	965	14,564	8	266	19·1	24·9
6	West ”	15,951	4,087	19,179	51	512	33·1	30·6
7	North Ward	1,891	33,769	1,357	48	166	19·0	33·3
8	Centre ”	90	27,625	388	462	537	19·0	33·3
9	South ”	962	19,634	276	65	63	13	33·3
10	4th Division	4	815	18,981	5,139	44	24·979	36·8
11	North Ward	4,176	36,638	643	66	41,523	23·2	32·3
12	Centre ”	5,144	22,629	1,798	205	29,776	23·9	34·5
13	South ”	4,176	17,399	2,053	89	23,717	62	30·8
14	North Ward	6	1,372	10,105	270	4	1,293	35·8
15	South ”	2,141	11,589	1,384	66	15,180	74	30·7
16	North Ward	7	2,356	23,023	1,324	49	30·1	34·9
17	Centre ”	7	483	23,215	14,934	11	805	34·7
18	South ”	572	24,738	7,490	51	32,851	10	45·8
19	East Ward	8	2,806	26,006	5,274	18	34·358	34·8
20	West ”	2,446	17,178	612	83	20,254	90	44·6
	Total ...		41,812	415,910	59,169	1,769	518,660	360
							14,958	43·3
							2,560	36·0
							18,688	360
								360

Annual Form No. VI.—Deaths registered from *Cholera* by Wards during each month of the year 1915.

Annual Form No. VII.—Deaths registered from Small-pox by Wards during each month of the year 1915.

1	2	Wards.	3			4			5			6		
			Total.			Ratio of deaths per 1,000 of Population.			Males.			Females.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Present Divisions.	Corresponding Old Divisions.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.
1	2	East Ward ...	1	...	...	...	...	...	3	1	4	3	...	3
2	2	Centre " "	...	...	...	...	...	...	3	...	...	...	...	...
3	3	West " "	...	...	...	...	...	...	...	...	...	...	...	...
4	4	East Ward ...	3	...	...	...	...	...	...	2	...	...	...	...
5	5	Centre " "	...	...	...	...	...	...	...	...	...	...	...	...
6	6	West " "	...	...	...	...	...	...	...	1	...	...	...	...
7	7	North Ward ...	2	...	...	...	...	...	1	1	1	1	...	1
8	8	Centre " "	...	...	...	...	...	...	1	1	1	1	...	1
9	9	South " "	...	...	...	...	...	...	1	1	1	1	...	1
10	4th	Division...	4	...	...	...	...	...	1	1	1	1	...	1
11	11	North Ward ...	5	...	1	...	...	...	1	1	1	1	...	1
12	12	Centre " "	...	...	1	...	...	...	1	1	1	1	...	1
13	13	North " "	...	...	1	...	...	...	1	1	1	1	...	1
14	14	North Ward ...	6	...	1	...	...	...	1	1	1	1	...	1
15	15	South " "	...	...	1	...	...	...	1	1	1	1	...	1
16	16	North Ward ...	7	1	...	...	...	2	1	1	1	1	...	1
17	17	Centre " "	...	1	...	...	2	1	1	1	1	1	...	1
18	18	South " "	...	1	...	...	2	1	1	1	1	1	...	1
19	19	East Ward ...	8	...	2	...	...	1	1	1	1	1	...	1
20	20	West " "	...	...	...	...	...	...	1	1	1	1	...	1
Total ...														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Mean ratio per 1,000 during previous five years.														

Annual Form No. VIII.—Deaths registered from *Measles* by Wards during each month of the year 1915.

Annual Form No. IX.—Deaths registered from *Plague* by Wards during each month of the year 1915.

1	2	3	4	5	6
Wards.		Ratio of deaths per 1,000 of Population.			Mean ratio per 1,000 during previous five years.
Present Divisions.		Males.	Females.	Total.	
1	East Ward...	..	1	..	0.01
2	Centre ..	..	..	..	0.05
3	West ..	..	..	..	0.01
4	East Ward...	..	3	..	0.01
5	Centre ..	..	..	..	...
6	West ..	..	..	..	...
7	North Ward...	..	2	..	..
8	Centre ..	..	..	..	..
9	South ..	..	..	..	..
10	4th Division ..	..	4	..	..
11	North Ward...	..	5	..	..
12	Centre ..	..	..	..	0.007
13	South ..	..	..	..	0.008
14	North Ward...	..	6	..	..
15	South ..	..	..	..	..
16	North Ward...	..	4	..	..
17	Centre ..	..	..	..	0.02
18	South ..	..	..	..	..
19	East Ward...	..	8	..	0.06
20	West ..	..	..	..	..
Total...		..	..	..	0.05

Annual Form No X.—Deaths registered from *Malaria* by Wards during each month of the year 1915.

1	2	3	4	5	6
Present Division.		Wards.		Ratio of deaths per 1,000 of Population.	
Corresponding Old Divisions.		Wards.		Total.	
January.	February.	March.	April.	May.	June.
July.	August.	September.	October.	November.	December.
1 East Ward	...	4	11	7	9
2 Centre "	...	35	32	19	13
3 West "	...	26	44	23	14
4 East Ward	...	2	1	3	5
5 Centre "	...	11	10	12	3
6 West "	...	12	14	13	12
7 North Ward	...	25	11	10	15
8 Centre "	...	21	13	15	12
9 South "	...	6	10	10	8
10 4th Division	...	4	13	14	12
11 North Ward	...	5	15	8	20
12 Centre "	...	6	6	9	5
13 South "	3
14 North Ward	...	3	1	2	...
15 South "	1	1	1
16 North Ward	...	4	5	3	4
17 Centre "	...	7	4	1	5
18 South "	...	6	1	1	4
19 East Ward	...	5	12	7	5
20 West "	...	2	...	3	1
Total...	209	178	191	145	113
Mean ratio per 1,000 during previous five years.	838	848	1,686	848	97
	87	79	117	116	150
					5·3

Annual Form No. XI.—Deaths registered from *Enteric Fever* by Wards during each month of the year 1915.

1	2	3	4	5	6
Present Districts.			Wards.		
Corresponding Old Districts.			Wards.		
Wards.			Ratio of deaths per 1,000 of Population.		
1	2	3	4	5	6
January.	February.	March.	April.	May.	June.
July.	August.	September.	October.	November.	December.
Total.			Males.	Females.	Total.
Total.			Males.	Females.	Total.
1	2	3	4	5	6
East Ward	Centre "	West "	East Ward	Centre "	West "
1	2	3	1	1	1
Centre "	West "	East Ward	Centre "	West "	East Ward
2	3	4	2	1	1
West "	East Ward	Centre "	West "	East Ward	Centre "
3	4	5	3	2	1
North Ward	Centre "	South "	North Ward	Centre "	South "
4	5	6	4	3	2
Centre "	South "	North Ward	Centre "	South "	North Ward
5	6	7	5	4	3
South "	North Ward	Centre "	South "	North Ward	Centre "
6	7	8	6	5	4
4th Division	North Ward	Centre "	4th Division	North Ward	Centre "
7	8	9	7	6	5
North Ward	Centre "	South "	North Ward	Centre "	South "
8	9	10	8	7	6
Centre "	South "	North Ward	Centre "	South "	North Ward
9	10	11	9	8	7
South "	North Ward	Centre "	South "	North Ward	Centre "
10	11	12	10	9	8
North Ward	Centre "	South "	North Ward	Centre "	South "
11	12	13	11	10	9
Centre "	South "	North Ward	Centre "	South "	North Ward
12	13	14	12	11	10
South "	North Ward	Centre "	South "	North Ward	Centre "
13	14	15	13	12	11
North Ward	Centre "	South "	North Ward	Centre "	South "
14	15	16	14	13	12
Centre "	South "	North Ward	Centre "	South "	North Ward
15	16	17	15	14	13
South "	North Ward	Centre "	South "	North Ward	Centre "
16	17	18	16	15	14
North Ward	Centre "	South "	North Ward	Centre "	South "
17	18	19	17	16	15
Centre "	South "	East Ward	Centre "	South "	East Ward
18	19	20	18	17	16
South "	East Ward	West "	South "	East Ward	West "
19	20	Total...	19	18	17
West "	Total...	Total...	19	18	17
20	Total...	Total...	20	19	18
			4	3	2
			5	4	3
			6	5	4

Annual Form No. XII.—Deaths registered from *Other Fevers* by Wards during each month of the year 1915.

1	2	Wards	Present Divisions.	Corresponding Old Divisions.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	3			4			5					
															Ratio of Deaths per 1,000 of Population.			Ratio of Deaths per 1,000 of Population.			Ratio of Deaths per 1,000 of Population.					
1	2	East Ward	...	2	6	...	1	4	2	...	6	17	2	1	3	12	15	27	1.2	1.4	1.3	5.3	5.5	5.6		
2	2	Centre ,,	...	17	7	6	7	10	4	4	3	13	13	4	3	11	60	51	2.9	2.5	2.7	5.5	5.5	5.6		
3	3	West ,,	...	2	2	1	1	2	2	2	1	1	1	1	1	3	27	10	3.5	3.5	3.5	2.4	2.4	2.4		
4	4	East Ward	...	4	1	1	2	1	2	2	1	1	1	1	1	6	10	16	1.2	2.7	1.8	3.2	3.2	3.2		
5	5	Centre ,,	...	...	...	1	1	1	1	1	1	1	1	1	1	1	3	3	0.3	0.3	0.3	2.2	2.2	2.2
6	6	West ,,	...	...	...	4	4	1	1	1	1	1	1	1	1	2	8	6	1.4	0.7	0.6	0.6	0.6	0.6
7	7	North Ward	...	4	1	1	8	3	3	3	3	3	3	3	3	3	19	6	25	1.0	0.3	0.7	3.3	3.3	3.3	
8	8	Centre ,,	1	1	7	1	7	2	2	2	2	2	2	2	10	3	13	0.7	0.2	0.5	2.7	2.7	2.7	
9	9	South ,,	...	2	1	3	6	1	7	2	5	5	3	3	3	3	18	21	39	1.6	2.2	1.9	2.7	2.7	2.7	
10	10	4th Division	...	4	3	1	2	2	2	6	8	0.2	0.5	0.3	1.4	1.4	1.4	
11	11	North Ward	...	5	2	1	4	1	1	1	1	1	1	1	1	1	6	...	8	9	17	0.4	0.4	0.4		
12	12	Centre ,,	2	2	4	6	5	3	3	3	3	3	3	5	1	1	1.5	1.5	1.5	2.0	2.0	2.0	
13	13	South ,,	1	1	1	1	1	1	1	1	1	1	2	3	3	7	6	0.6	0.5	0.5	1.5	
14	14	North Ward	...	6	...	2	2	4	1	1	1	1	1	1	1	1	2	1	2	3	5	10	15	0.8	1.3	1.5
15	15	South ,,	...	6	2	2	2	1	2	1	1	1	1	1	1	1	3	4	4	1.4	12	26	1.8	1.6	1.8	
16	16	North Ward	...	5	...	2	2	2	2	2	2	2	2	2	2	2	2	5	7	8	4	6	10	0.3	0.5	0.4
17	17	Centre ,,	...	2	1	1	6	4	3	3	5	1	1	1	1	1	7	5	1	3	7	21	58	1.1	1.5	1.4
18	18	South ,,	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11	16	37	53	53	1.6
19	19	East Ward	...	8	...	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	5	8	16	0.5	0.5	1.6
20	20	West ,,	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	4	0.2	0.2	1.7
Total 1 ...				40			30			86			36			55			31			34				
				49			81			23			68			277			292			569				
				1.2			1.0			2.3			2.3			68			277			292				
				1.1			1.1			2.5			2.5			2.5			2.5			2.5				

Annual Form No. XIII.—Deaths registered from *Dysentery and Diarrhaea* by Wards during each month of the year 1915.

Annual Form No. XIV — Deaths registered from *Tubercle including Tubercle of the Lung* by Wards during each month of the year 1914.

1	2	3	4			5			6				
			Wards.			Ratio of deaths per 1,000 of Population.			Mean ratio per 1,000 during previous five years.				
Present Divisions.	Corresponding Old Divisions.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
1 East Ward	1	5	2	3	2	2	4	5	1	3	3	15	32
2 Centre "	2	4	4	5	5	6	5	5	2	4	4	18	49
3 West "	3	3	1	1	1	1	1	1	1	1	1	10	17
4 East Ward	4	2	...	3	1	1	2	4	1	14	21	0.8	1.0
5 Centre "	5	...	2	1	1	1	1	1	1	1	11	0.4	1.2
6 West "	6	...	1	2	2	2	3	3	1	7	22	0.7	1.3
7 North Ward	7	15	8	18	5	9	10	5	9	16	7	55	109
8 Centre "	8	4	5	5	3	5	5	3	1	8	7	25	52
9 South "	9	4	4	4	4	4	4	3	1	1	2	7	12
10 4th Division	10	4	3	5	1	4	3	3	3	3	3	18	37
11 North Ward	11	3	3	3	5	4	6	6	6	6	4	19	37
12 Centre "	12	1	1	1	4	2	6	3	2	1	2	11	28
13 South "	13	3	1	1	1	1	1	1	1	1	1	4	9
14 North Ward	14	6	5	1	...	1	2	...	1	...	1	17	2
15 South "	15	...	6	1	...	1	1	1	...	1	1	4	6
16 North Ward	16	2	4	4	1	2	2	2	4	3	3	1	13
17 Centre "	17	9	6	3	6	5	6	4	10	3	8	7	33
18 South "	18	8	4	5	8	1	3	7	2	5	6	4	19
19 East Ward	19	8	1	1	1	1	1	1	1	7	6	5	26
20 West "	20	...	8	1	1	1	2	1	2	1	1	11	6
Total...		74	54	76	55	61	54	62	63	72	59	66	73
													759
													1.5
													1.4

Annual Form No. XV.—Deaths registered from Respiratory Diseases excluding Tubercle of the Lung by Wards during each month of the year 1915.

1	2	Wards.	Present Divisions.	Corresponding Old Districts.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of Population.			Mean ratio per 1,000 during previous five years.	6				
																Males.	Females.	Total.	Males.	Females.	Total.						
1	East Ward	...			5	6	3	6	6	6	2	3	10	9	7	37	28	65	3.8	2.7	3.2	1.6					
2	Centre "	...			11	10	7	6	6	6	2	2	11	11	41	18	18	36	2.0	2.0	2.0	1.3					
3	West "	...			4	10	2	4	3	2	2	2	2	2	3	3	2	2.5	2.3	2.5	2.4	1.4					
4	East Ward	...			3	3	2	2	2	2	4	6	10	10	4	4	8	35	13	48	4.1	2.2	3.3	4.4			
5	Centre "	...			16	13	9	10	13	6	6	6	11	16	16	10	10	16	68	54	122	6.7	6.0	6.4	4.6		
6	West "	...			8	15	10	10	16	10	12	12	10	19	19	10	9	20	75	76	151	6.2	7.3	6.7	5.2		
7	North Ward	...			9	10	4	5	9	14	5	5	22	21	17	8	37	84	77	161	4.6	4.1	4.3	4.8			
8	Centre "	...			2	9	6	10	5	3	8	7	5	14	13	8	18	53	53	106	3.6	3.9	3.7	4.2			
9	South "	...			23	13	12	8	12	8	10	10	16	11	8	18	28	108	76	184	9.6	7.8	8.8	6.2			
11	4th Division	...			4	10	7	3	4	7	6	6	5	7	7	2	2	10	42	27	69	3.2	2.3	2.8	5.6		
11	North Ward	...			12	11	17	4	10	6	11	9	15	16	15	7	15	59	61	120	2.8	3.0	2.9	3.7			
12	Centre "	...			14	7	17	4	11	13	4	4	14	13	10	10	14	15	87	67	154	5.7	4.6	5.2	4.7		
13	South "	...			6	5	7	4	3	4	3	4	5	8	8	4	4	6	32	32	64	2.6	2.8	2.7	3.6		
14	North Ward	...			6	6	3	4	7	9	2	2	6	8	10	7	6	10	8	29	47	76	4.7	8.5	6.5	3.7	
15	South "	...			10	8	7	7	9	5	5	5	8	8	11	8	4	7	54	40	94	7.1	5.3	6.2	3.8		
16	North Ward	...			8	6	8	5	8	5	4	7	5	13	10	5	9	46	37	83	3.4	2.8	3.1	6.9			
17	Centre "	...			17	24	25	19	28	24	24	27	27	30	13	11	30	145	130	275	7.4	6.8	7.1	6.1			
18	South "	...			19	15	20	18	30	18	20	18	21	28	8	7	27	115	121	236	6.9	7.5	7.2	6.7			
19	East Ward	...			8	6	20	12	13	12	4	4	13	12	4	4	7	6	66	61	127	3.9	3.5	3.7	2.3		
20	West "	...			4	3	6	4	3	3	3	3	6	4	4	4	5	7	19	31	59	1.8	3.2	2.5	2.1		
Total ...			197	176	202	152	155	194	179	177	278	166	138	289	1,213	1,090	2,303	4.6	4.3	4.3	4.4	4.1					

Annual Form No. XVI.—Deaths registered from *Injuries* by Wards during each month of the year 1915.

1	2	3	4	5	6
Present Divisions.			Wards.		
Corresponding Old Divisions.			Wards.		
1	2	3	4	5	6
1 East	2 Ward	... 1	1 1	3 1	1 1
2 Centre	2 " "	1 1	1 1	2 1	1 1
3 West	2 "	1 1	1 1	2 1	1 1
4 East	3 Ward	... 3	1 1	3 1	1 1
5 Centre	2 "	1 1	1 1	2 1	1 1
6 West	2 "	1 1	1 1	2 1	1 1
7 North	3 Ward	... 2	1 1	3 1	1 1
8 Centre	2 "	1 1	1 1	2 1	1 1
9 South	2 "	1 1	1 1	2 1	1 1
10 4th Division	4	3	1 1	3 1	1 1
11 North	5 Ward	... 2	1 1	3 1	1 1
12 Centre	4 "	1 1	1 1	2 1	1 1
13 South	3 "	1 1	1 1	2 1	1 1
14 North	6 Ward	... 3	1 1	3 1	1 1
15 South	5 "	1 1	1 1	2 1	1 1
16 North	7 Ward	... 2	1 1	3 1	1 1
17 Centre	6 "	2 2	1 1	3 2	1 1
18 South	5 "	2 2	1 1	3 2	1 1
19 East	8 Ward	... 1	1 1	3 1	1 1
20 West	7 "	1 1	1 1	2 1	1 1
21	20	11	7	12	9
22	16	11	11	16	9
23	15	15	15	15	15
Total...					

Annual Form No. XVII.—Deaths registered from Other Causes by Wards during each month of the year 1915.

1	2	Wards.	Present Divisions.	Corresponding Old Divisions.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.			Ratio of deaths per 1,000 of Population.			Mean ratio per 1,000 during previous five years.	6							
																Males.		Total.	Males.		Females.	Total.								
																5	4	5	5	4	5	5	4	5						
1	East Ward ..	..	..	..	32	19	38	21	17	21	20	39	49	23	27	30	170	166	336	17.4	15.7	16.5	16.7	20.9	16.6		
2	Centre ..	..	..	..	94	75	86	42	54	77	61	72	92	57	45	41	138	170	392	216	19.4	20.5	20.5	20.4	20.4	20.4	
3	West ..	..	..	..	37	32	34	37	27	17	18	24	22	17	20	23	17	108	228	14.0	18.0	15.7	15.7	15.7	16.9		
4	East Ward ..	..	..	..	19	16	26	18	15	23	19	22	19	18	17	16	14	19	120	112	238	11.1	13.9	12.4	12.4	15.7	15.7
5	Centre ..	..	..	..	25	28	21	22	8	19	23	18	17	18	17	12	22	28	125	132	257	10.4	12.6	11.4	11.4	13.9	13.9
6	West ..	..	..	..	25	24	32	19	15	34	9	14	12	12	12	22	27	27	125	132	257	10.4	12.6	11.4	11.4	13.9	13.9
7	North Ward ..	..	..	..	73	73	108	58	46	41	50	64	61	56	41	36	41	346	407	753	18.8	21.8	20.3	20.3	17.8	17.8	
8	Centre	54	50	44	35	35	39	42	35	44	37	42	42	37	41	34	247	288	535	16.6	21.0	18.7	18.7	16.1	16.1		
9	South	22	28	28	28	18	33	33	33	33	33	33	33	38	18	22	191	160	351	17.0	16.4	16.8	16.8	20.2	20.2		
10	4th Division ..	..	..	..	61	36	39	39	18	38	30	23	26	26	26	26	37	29	216	190	406	16.4	16.0	16.3	16.3	14.6	14.6
11	North Ward ..	..	..	..	48	54	61	44	38	43	45	60	61	55	43	35	43	35	296	304	600	14.0	14.9	14.4	14.4	15.0	15.0
12	Centre ..	..	..	..	33	26	38	29	33	46	30	45	30	49	20	29	29	31	192	214	418	13.6	14.5	14.0	14.0	13.8	13.8
13	South ..	..	..	..	41	33	34	34	18	35	31	37	31	37	41	37	37	31	192	214	406	15.4	19.0	17.1	17.1	16.7	16.7
14	North Ward ..	..	..	..	19	12	12	12	15	15	9	4	16	13	10	7	15	16	77	70	147	12.4	12.6	12.5	12.5	13.7	13.7
15	South ..	..	..	..	15	8	21	20	9	19	12	12	23	11	17	14	14	11	97	86	183	12.7	11.4	12.1	12.1	14.2	14.2
16	North Ward	43	34	46	31	39	38	46	31	39	37	37	39	48	45	30	70	262	247	509	19.3	18.8	19.0	19.0	16.5	16.5	
17	Centre	54	60	65	60	63	57	52	58	63	60	42	40	42	42	50	44	51	333	396	729	17.0	20.8	18.9	18.9	21.0	21.0
18	South	58	37	44	44	42	40	64	52	52	67	50	44	41	37	31	296	295	591	17.7	18.3	18.0	18.0	18.8	18.8		
19	East Ward	53	51	53	37	42	55	54	43	39	48	39	39	39	39	21	33	25	284	573	17.0	16.4	16.7	14.3	15.0	15.0	
20	West	18	28	26	26	22	29	22	22	22	22	22	22	22	22	21	33	148	153	301	14.0	15.8	14.9	14.9	15.0	15.0	
	Total...				824	724	857	613	628	728	646	738	838	636	639	620	849	4,302	4,400	8,702	16.1	17.4	16.8	16.8	16.6	16.6				

Annual Form No. XVIII.—Comparing the Deaths from some of the *Principal Diseases* during the year with the Deaths during the preceding four years.

Years.	Cholera.	Small-pox.	Measles.	Plague.	Malaria.	Enteric Fever.	Other Fevers.	Dysentery and Diarrhoea.	Tubercle excluding Tubercle of Lung.	Respiratory System.			All other causes.	Total Deaths.														
										Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.	Deaths.	Ratio per 1,000.													
1911	747	1.4	480	0.9	170	0.3	3	0.0008	2,884	5.6	52	0.1	1,111	2.1	4,854	9.4	557	1.1	203	0.4	2,251	4.3	138	0.3	8,321	16.0	21,771	42.0
1912	374	0.7	106	0.2	95	0.2	1	0.0002	2,934	5.7	42	0.08	957	1.8	4,897	9.4	453	0.9	219	0.4	1,999	3.9	164	0.3	7,891	15.2	20,132	38.8
1913	29	0.05	34	0.06	157	0.3	3	0.0015	2,788	5.4	51	0.1	992	1.9	5,193	10.0	36	0.07	445	0.9	2,219	4.2	170	0.3	8,585	16.5	20,675	39.6
1914	1,757	3.4	66	0.1	87	0.2	2	0.004	2,658	5.1	66	0.1	729	1.4	5,508	10.6	35	0.07	703	1.4	3,024	5.8	149	0.3	9,399	18.1	24,174	46.6
Mean of the last four years.	727	1.4	172	0.3	127	0.2	2	0.004	2,816	5.4	53	0.1	947	1.8	5,113	9.9	270	0.5	393	0.8	2,373	4.6	155	0.3	8,549	15.1	21,688	41.8
1915	35	0.07	92	0.2	81	0.2	...	...	...	3.8	7.5	0.1	569	1.1	4,208	8.1	48	0.09	711	1.4	2,303	4.4	178	0.3	8,702	16.8	18,683	36.0

Annual Form No. XIX showing a Complete Classification of Diseases arranged in the order adopted in the Nomenclature of Diseases.

No. in the Nomenclature of Diseases.	No. in the Nomenclature of Diseases.	CAUSES OF DEATH.												Total.		
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.			
4	4	Beri-beri	...	...	...	2	...	...	...	1	..	...	...	3		
6	6	Chicken-pox	...	...	...	1	...	2	...	1	1	...	1	8		
7	7	Cholera	...	...	...	11	3	3	3	5	1	2	1	35		
10	10	Diphtheria	...	...	...	1	...	1	...	...	1	...	...	4		
11	11	Dysentery	...	...	...	250	206	255	185	163	142	151	228	2,386		
13	13	Enteric Fever	...	...	...	...	4	8	11	2	4	4	8	5	75	
14	14	Enteritis	...	...	...	...	110	109	178	105	137	144	194	185	1,680	
15	15	Erysipelas	...	...	...	...	7	5	4	6	8	3	6	10	4	65
22	22	Kala-Azar	...	...	...	...	2	1	1	...	1	2	2	2	2	18
23	23	Leprosy	...	...	...	...	13	8	7	13	6	6	3	13	10	101
25	25	Malaria Fever	...	...	...	...	199	172	192	185	142	106	137	108	61	67
							4	4	7	4	2	4	10	12	2	78
										1	...	...	...	...	...	1
										1	...	...	5	7	10	5
										1	...	1	2	...	1	16
										1	2	3	7	8	4	26
										2	...	...	1	...	...	2
										1	...	1	...	1	...	536
										1	2	3	7	46	33	76
										1	1	1	1	1	1	537
										1	1	1	1	1	1	4
										2	2	2	9	4	4	7
										5	5	3	4	5	56	

Infective Diseases.

No. in the No. of menclature of Diseases.	CAUSES OF DEATH.												
	General Diseases.			Infective Diseases.			Infective Diseases—(contd.).			General Diseases.			
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
39	Septicaemia	...	...	3	2	4	3	5	3	2	2	37	
	"	Puerperal	...	11	6	8	7	14	9	9	13	8	12
	Septic Fever	...	...	1	1	2	1	2	1	1	1	1	14
	Peritonitis...	...	...	...	1	1	...	1	2	...	...	1	7
	"	Ankylosis...	...	...	1	...	4	...	1	3	...	1	13
41	Small-pox	...	...	1	2	8	2	3	2	10	9	14	15
42	Syphilis	...	...	8	1	4	4	2	1	1	6	5	2
43	Tetanus	...	...	6	3	6	9	4	4	3	3	9	8
44	Tubercle excluding tubercle of Lung	...	...	6	1	5	4	2	1	2	7	3	6
47	Whooping Cough	...	...	6	3	8	3	4	6	5	4	4	1
61	Anæmia	...	...	8	9	7	4	7	6	5	8	6	5
63	"	Pernicious	...	1	..	1	1	1	...	2	..	...	4
	"	and Dropsy	...	31	25	24	19	25	23	25	23	25	18
66	Diabetes	...	...	2	2	3	4	2	5	3	2	6	4
	Diabetic Corbuncle	...	...	3	1	2	4	5	6	7	7	10	4
	"	Coma	...	..	2	1	...	4	1	1	...	4	4
	"	Gangrene	...	..	1	1	2	1	2	1	3	1	3
76	Rickets	...	...	1	...	1	1	2	...	1	3	2	...
80	Tumour in the Abdomen	...	...	..	..	1	...	..	1	1	...	1	...
	Sarcoma	...	...	..	..	..	..	..	1	1	...	...	...
	Cancer	...	...	..	..	2	1	3	4	2	2	3	4
	Ulcer	...	...	..	..	3	...	2	1	4	2	3	1

No. in the N ^{o.} of Diseases. menclature of Diseases.	CAUSES OF DEATH.	TOTAL.														
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.			
123	Eclampsia (Convulsions) ...	...	...	163	145	166	119	108	126	114	123	164	117	122	195	1,662
124	" Puerperal ...	...	...	7	3	6	5	4	3	4	1	2	4	3	6	48
131	Epilepsy ...	...	...	...	...	4	3	2	1	4	3	2	2	2	5	30
133	Neuralgia ...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1
143	Hysteria ...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	2
143	Neuasthenia ...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	3
145	II Disorders of Function.												...	...	4	
145	Mania ...	...	...	...	...	...	...	...	2	...	...	1	...	...	1	...
286	DISEASES OF THE HEART.												...	...	1	...
292	Diseases of the Endocardium												...	...	1	...
293	Diseases of the Pericardium												...	...	1	3
292	Endocarditis ...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	2
293	Valvular Disease ...	...	...	...	...	...	...	...	...	...	...	...	...	11	3	79
	Cardiac Failure ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	245
	Cardiac Drowsy ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	102
	Diseases of the Heart (not specified) ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	232

Diseases of the Nervous System—(contd.).

Diseases of the Nervous System—(contd.).

Diseases of the Pericardium.

Diseases of the Heart.

Diseases of the Respiratory System									
Diseases of the Circulatory System—(contd.).									
Diseases of the Myocardium.									
298	Dilatation of the Heart	...	..	...	2	...	1	1	8
301	Cyanosis of the Heart	...	..	...	1	...	1	3	9
304	Syrope	...	..	...	...	2	1	1	7
Diseases of the Blood Vessels.									
316	Aneurysm of Aorta	...	..	...	2	...	1	1	2
322	(1) Thrombosis of Arteries	...	..	...	1	...	...	...	1
Diseases of the Veins.									
325	Phlegmasia Dolens	...	...	...	...	...	1	...	2
Diseases of the Respiratory System and strictly Local.									
338	Asthma	...	...	...	16	13	9	6	110
Diseases of the Trachea and Bronchi.									
404	Bronchitis (acute)	...	...	...	31	25	29	11	295
	, (chronic)	...	...	...	16	9	18	15	190
	, (a) Catarrhal	...	...	...	...	...	1	...	2
Diseases of the Lung.									
410	Congestion of the Lung	...	...	...	...	...	1	...	2
411	Hæmoptysis	...	...	...	...	...	1	...	3
413	Broncho-Pneumnia	...	...	...	92	85	102	75	1,091
419	Phthisis	...	...	...	68	53	71	51	711
422	Atelectasis	...	...	...	1	...	1	...	9
Diseases of the Pleura.									
425	Pleurisy	...	...	...	...	1	1	1	10
426	Empyema	...	...	...	1	...	1	...	4

No. in the No. of menclature of Diseases.	No. in the No. of menclature of Diseases.	CAUSES OF DEATH.										Total.
		February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	
<i>Diseases of the Mouth.</i>												
436	Stomatitis	...	...	...	1	1	1	1	2	...	2	10
438	Cancerum Oris	...	...	1	1	2	...	1	3	...	1	10
<i>Diseases of the Teeth, Alveoli, and Gums.</i>												
440	Disorders of Dentition	Diarrhea	...	5	8	8	11	15	12	9	10	106
<i>Diseases of the Palate and Fauces.</i>												
475	Tonsillitis	...	...	...	...	...	...	...	...	1	...	1
<i>Diseases of the Stomach.</i>												
489	Gastritis Acute	...	...	4	5	8	4	5	7	4	3	58
	," Chronic.	...	...	...	1	...	1	...	2	2	...	7
490	Ulceration of Stomach	...	...	...	...	...	1	...	...	...	...	1
499	Dyspepsia	...	...	...	14	9	9	13	16	4	10	119
<i>Diseases of the Intestines.</i>												
515	Inflammation (2) Appendicitis	...	...	...	1	...	...	1	...	1	2	2
	," Gastro-Enteritis	...	...	12	14	20	16	17	12	19	23	19
528	Hernia	...	...	...	2	1	2	1	2	1	2	19
	," Strangulated	...	...	...	2	2	2	1	1	1	2	22
530	Intussusception	...	...	...	...	...	1	1	1	1	1	6
536	Obstruction of Bowels	...	...	...	1	6	10	6	12	6	8	85
539	Intestinal catarrh	...	...	...	2	4	6	2	3	2	5	36
544	Colic	...	...	...	1	1	1	1	1	1	1	5

Diseases of Digestive System.

741	Diseases of the Scrotum.	
	Cellulitis Scrotum	...
742	Sloughing Scrotum	

757	Diseases of the Testicle.	
	Inflammation —(1) Orchits	...
762	Axial rotation	

DISEASES OF THE FEMALE ORGANS OF GENERATION.		
Diseases of the uterine Ligaments, &c.		
783	Inflammation (b) Pelvic cellulitis	

Diseases of the uterus including the cervide.		
787	Rupture of uterus	

Functional and Symptomatic Disorders of the Female Organs of Generation.		
821	Menorrhagia	

Affections connected with Pregnancy.		
834	Abortion	

Affections connected with Parturition.		
852	Premature Birth	

Affections connected with Parturition.		
971	Difficult Labour	

Affections connected with Parturition.		
971	...	

Affections connected with Parturition.		
15	...	

Diseases of the Generative system. —(contd.).

CAUSES OF DEATH.		TOTAL.											
Januay.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Deceember.	Deceember.
<i>Affections connected on Parturition.</i>													
853	Post-partum Hæmorrhage	...	...	1	...	1	2	3	1	1	1	1	14
855	Puerperal Causes.—	...	...	1	...	...	3	4	2	1	2	...	16
	" Sapremia	...	...	1	...	...	8	6	6	3	2	2	5
	" Tetanus	...	...	1	...	...	15	9	7	4	3	1	31
	" Pyaemia	...	...	7	8	5	...	...	...	4	1	...	65
870	Sudden death after delivery	...	...	...	...	...	2	...	...	...	1	1	6
	(b) Thrombosis of the cardiac	...	...	...	...	1	...	...	...	...	...	...	1
<i>Diseases of the connective Tissue.</i>													
953	Abscess	...	...	...	...	4	6	6	4	7	4	6	55
956	Oedema	...	...	...	...	7	6	11	4	6	9	4	10
	<i>Diseases of the Skin.</i>												89
962	Eczema	...	...	...	...	...	2	...	1	2	1	...	10
965	Boil	...	...	...	...	1	...	1	1	...	...	...	3
966	Carbuncle	...	...	...	1	3	...	1	4	4	6	3	27
970	Herpes	...	...	...	...	...	...	...	1	...	1	...	2
1001	B. Animal Parasites	...	...	...	...	...	...	...	...	...	1	1	...
	Scabies	...	...	...	...	...	...	...	...	...	...	...	2

2.0. in the
Number of
Deaths.

General Injuries.		General Injuries.		Local Injuries.		
1025	Effects of Heat (a) Burn and Scalds	3	8	2	4	
1030	Suffocation	3	3	1	2	
	" by Drowning, Accidental	3	12	2	1	
	" " Suicidal	6	5	10	9	
	" by Hanging	...	2	5	3	
1031	Starvation	...	1	2	1	
1033	Shock	...	1	1	1	
	" Due to Carriage Accident	...	1	1	1	
	" After Operation	...	1	1	1	
	Local Injuries.		Local Injuries.		Local Injuries.	
1092	Fracture of the Skull	...	...	1	1
1096	Concussion of Brain	...	...	1	1
	Injuries of the Chest.		Injuries of the Chest.		Injuries of the Chest.	
1152	Injuries of the Heart	...	...	1	1
1156	Multiple Injury	...	...	1	1
	Injuries of the Back (including the whole Vertebral Column).		Injuries of the Back (including the whole Vertebral Column).		Injuries of the Back (including the whole Vertebral Column).	
1160	Fracture of Spine	...	...	1	1
1162	Compound Fracture	...	...	1	1
	Injuries and non-specified causes.		Injuries and non-specified causes.		Injuries and non-specified causes.	
Debility	...	...	...	1	1
Old age	...	...	...	1	1
Natural causes	...	...	...	1	1
Unknown	...	...	...	1	1

HEALTH DEPARTMENT—SANITARY SECTION.

Statement of Notices dealt with in the several Divisions during the year 1915 :—

Divisions.	No. of premises, as per Census of 1911.	No. of premises inspected	No. of notices pending disposal on 1-1-1915.	No. of notices issued during 1915.	Total	No. complied with.			No. of notices otherwise disposed of e.g., cancelled or withdrawn.	No. of notices pending disposal on 1-1-1916.
						Volun-tary.	By prose-cution.	By transfer to W.D.		
1st Division ...	3296	414	37	233	270	213	...	...	...	57
2nd " ...	6223	164	...	391	391	253	38	...	1	99
3rd " ...	2356	145	38	202	240	65	55	17	29	74
4th " ...	1411	470	46	242	288	108	86	...	...	94
5th " ...	2001	391	71	391	462	148	95	...	9	210
6th " ...	2210	291	88	521	609	288	162	...	92	67
7th " ...	3067	378	75	531	606	270	144	12	18	162
8th " ...	2592	717	43	651	694	448	78	...	...	168
9th " ...	1757	201	11	435	446	92	108	14	1	231
10th " ...	3376	203	15	134	149	78	13	9	26	23
11th " ...	4336	150	46	184	230	63	42	20	43	62
12th " ...	2868	327	208	1247	1455	971	63	71	190	160
13th " ...	2863	421	115	591	706	144	216	99	122	125
14th " ...	2264	118	113	123	236	173	7	...	8	48
15th " ...	1705	388	119	214	333	89	122	7	...	115
16th " ...	2396	310	146	421	567	110	208	54	45	150
17th " ...	4221	136	67	208	275	114	22	2	40	97
18th " ...	3604	255	132	337	469	139	137	36	40	117
19th " ...	4382	354	102	348	450	119	72	62	70	127
20th " ...	2667	154	47	118	165	75	11	39	9	31
Total ...	59595	5987	1519	7522	9041	3960	1679	442	743	2217

HEALTH DEPARTMENT—SANITARY SECTION.

Statement of Notices issued and disposed of during the year 1915.

(a) Total Number of premises in the Division according to the Census of 1911=59,595.
 (b) Number of premises inspected during the year 1915=5,987.

1 Section or By-law.	2 Substance of Section or By-law.	3 No. pend- ing on 1-1-1915.		4 No. issued during the year 1915.		5 Total.		6 No. complied with		7 No. disposed of by transfer to W. D. for departmental execution and recovery of cost.		8 No. of Notices disposed of or withdrawn or, cancellled, disposed of, otherwise disposed of L-1-1916.	
	
218	Constructing and connecting a house drain with a public drain	...	53	29	82	6	6	15	22	44	4	5	
221	Maintenance of troughs and pipes for catching and carrying the water from the roof and other parts of a building.	...	...	67	67	46	15	...	1	1	5		
224	Provision of latrines by owner or occupier	...	127	201	328	126	52	13	32	105	29		
227	Control of the Corporation over house drains, privies and cesspools	...	12	86	98	53	1	9	6	...	...
225	Fencing of buildings or land	...	...	2	2	1	...	1	...	...	...
245	Levelling, paving, metalling, flagging, etc., of any private street or part thereof	...	5	...	5	5	5	...	...	...	...
259	Repair of tanks, wells, etc., dangerous to neighbourhood	...	...	1	1	1	...	1	...	...	...
300	Prohibition against accumulation of filth and allowing of sewage to flow in streets.	...	32	49	81	35	26	25	2	18	1		
301	Cleansing of insanitary private tanks or wells used for drinking	...	12	1	13	13	...	...	...	64	67		
302	Do. fencing, repairing or filling up of insanitary tanks, wells, etc.	...	35	254	289	63	42	...	53	30	32	38	
303	Do. stagnant pool, ditch, etc.	...	66	104	160	27	33	19	29	9	8	44	
305	Do. of untenant buildings or lands	...	36	101	137	50	30	13	8	15	209	1,114	
306	Removal of filth or noxious vegetation	...	25	359	384	274	45	331	3	274	298	347	
307	Limewashing and cleansing of buildings	...	178	1,046	1,224	666	901	274	298	1,114	45		
308	To set right insanitary buildings	...	866	2,958	3,824	1,237	255	62	...	...	...	...
309	Rendering buildings fit for human habitation	...	20	689	709	1	...	...	...	1	103	95	
310	Abatement of overcrowding in dwelling houses or places	...	1	...	...	83	1	30	...	2	35	123	
315	Control over stables, cattle sheds and cow houses	...	4	280	284	54	...	1	1	1	9	3	
316	Discontinuance of the use of a building as a stable, etc.	...	10	232	242	10	10	10	...	2	...	...
366	Removal of patients suffering from dangerous diseases to hospitals	...	...	46	68	114	78	23	1	1	9	1	
367	Disinfection of buildings and articles in infected premises	...	...	...	...	882	...	80	...	...	...	23	
216 & 217	By-laws for the regulation of lodging houses	...	1	985	986	...	...	...	...	...	...	...
293(1)	Deposit of rubbish and filth by occupier	...	...	...	...	...	...	...	...	...	...	...
Total	...	1,519	7,522	9,041	3,960	1,679	442	743	2,217				

List of Inspections by the Food Inspector North Range during the year 1915.

1	Spring Heaven Shed and Export Sheds	...	...	...	...	173
2	Royapuram Goods Shed	...	...	...	...	127
3	South Indian Railway Goods Shed	...	...	...	...	98
4	Grain Godowns, North Beach and Grain Bazaars in Kotwal Market					129
5	Do	do	do	Wall Tax Road	...	55
6	Salt Fish Godowns	...	...	...	...	74
7	Potatoes do	...	...	...	...	126
8	Onions do	...	...	...	...	138
9	Sugar Candy Factory	...	...	...	...	32
10	Fruit Godowns	...	...	...	...	207
11	Aerated Water Factories	...	...	...	...	163
12	Coffee Hotels, Lodging Houses, Eating Houses	...	...	...	...	754
13	Bake Houses	...	...	...	...	224
14	Wheat Flour Godowns	...	...	...	...	98
15	Tin Food Shop	...	...	...	...	129
16	Markets	...	...	...	...	402
17	Sweet Meat Bazaar	...	...	...	...	149
18	Customs House	...	...	...	...	26
19	Auction Rooms	...	...	...	...	103
20	Sugar Candy Factories	...	...	...	...	18

List of articles seized and destroyed by the Food Inspector during the year 1915 in North Range.

1	Rice, Broken	...	...	...	...	Bags	541 $\frac{1}{2}$
2	Do. Raw	...	...	...	...	do	10
3	Grains Sweepings	...	...	...	...	do	15
4	Ragi	...	...	...	...	do	1
5	Bengal Gram	...	...	...	...	do	94
6	Red Gram	...	...	...	...	do	98
7	Toor Dholl	...	...	...	...	do	13 $\frac{1}{2}$
8	Beans	...	...	...	...	do	1
9	Wheat Flour	...	...	...	...	do	12
10	Wheat	...	...	...	...	do	2 $\frac{1}{4}$
11	Sooji	...	...	...	...	do	10
12	Tamarind	...	...	...	...	Bundles	5
13	Chillies	...	...	...	...	Viss	$\frac{1}{4}$
14	Turmeric	...	...	...	...	Maund	1 $\frac{1}{2}$
15	Garlic	...	...	...	...	Bags	10
16	Potatoes	...	...	...	...	10 $\frac{1}{4}$ Box and N. S. Cart load and 111 Maunds	
17	Onions	...	...	...	...	Country Cart loads	4
18	Do	...	...	...	...	2 Motor Lorry loads	
19	Do	...	...	...	...	2 Trolley loads	
20	Do	...	...	...	...	12 Box Cart loads and 228 $\frac{1}{4}$ Maunds	
21	Bread	...	...	...	...	Loaves	84
22	Shamai roots	...	...	...	...	Bag	1
23	Rice Cakes	...	...	...	...	1 Basket full and 142 Cakes	
24	Do. Flour	...	...	...	...	Measures	8

List of articles seized and destroyed by the Food Inspector during the year 1915 in North Range—(Continued).

25	Cocoanuts	...	...	...	...	...	159½
26	Cucumber	...	...	...	...	Bags	5
27	Dried Vegetables	...	...	...	...	2 Bags and 1 Basket	
28	Fish, large size	...	...	...	...		144
29	Prawns and Fish	...	...	...	...	Baskets	81½
30	Meat	...	...	...	...	Seers	228
31	Meat, Cooked, etc.	...	...	...	...	do	52
32	Beef	...	...	...	...	lbs.	32
33	Eggs	...	...	...	...		526
34	Country Sweets	...	...	...	...	Visses	9
35	Do Trash	...	...	...	...	do	23½
36	Sugar	...	...	...	...	Bags	4
37	Condensed Milk	...	...	...	...	Tins	20,647
38	Do	...	...	...	...	Small Tins	480
39	Unsweetened Milk	...	...	...	...	Tins	73
40	Do	...	...	...	...	Small Tins	110
41	Coffee, Milk, Cocoa and Milk, etc.	...	...	...	...		28
42	Confectionery	...	...	...	...	lbs.	1015
43	English Sweets	...	...	...	...	Boxes	109
44	Biscuits	...	...	...	...	Cases 4 and Tins	363
45	Grape Nuts	...	...	...	...	Tins	16
46	Ajax	...	...	...	...	do	288
47	Herrings	...	...	...	...	do	59
48	Vermicelle	...	...	...	...	lb.	1
49	Pickles	...	...	...	...	Bottle	1
50	Butter	...	...	...	...	Tins	2
51	Cheese	...	...	...	...	3 Cases and lbs.	20½
52	Preserved meat etc.	...	...	...	...	Tins	31
53	Jam	...	...	...	...	do	182
54	Peaches	...	...	...	...	do	24
55	Currents	...	...	...	...	1 Case and 2 Tins	
56	Preserved fruits	...	...	...	...	Tins and Bottles	34
57	Sugared Almonds	...	...	...	...	Bottles	2
58	Macroni	...	...	...	...	Packets	29
59	Oatmeal	...	...	...	...	do	245
60	Barley	...	...	...	...	Tins	8
61	Sugar	...	...	...	...	do	2
62	Sauce	...	...	...	...	Bottles	5
63	Apricot Nuts	...	...	...	...	Tin	1
64	Chocolates	...	...	...	...	9 Cases and 24 Tins	
65	Benger's Food	...	...	...	...	Tin	1
66	Drugs, Medicines, etc.	...	...	...	...	Bottles	15
67	Arrowroot	...	...	...	...	Tins	100
68	Bettle Nuts, etc.	...	...	...	...	Bundles	2
69	Tea	...	...	...	...	Packets	5
70	Coffee	...	...	...	...	Tins	3
71	Corn flour	...	...	...	...	Tin	1
72	Condiments	...	...	...	...	Visses	1½
73	Pickle, Oranges, large	...	...	...	...		362

List of articles seized and destroyed by the Food Inspector during the year 1915 in North Range—(Continued).

74	Oranges	...	...	...	...	Baskets	66 $\frac{1}{2}$
75	Country Apples	...	...	...	...	do	2
76	Custard Apples	...	...	...	...	10 Bigcart loads and 14 Baskets	
77	Apples	...	...	...	...	Baskets	13
78	Pine Apples	...	...	...	...	do	12
79	Mangoes	...	...	...	...	do	25 $\frac{1}{2}$
80	Pomagranates	...	...	...	...	do	3
81	Mangosteen	...	...	...	...	do	1
82	Pumloe	...	...	...	...	do	4
83	Figs	...	...	...	...		351
84	Jack Fruits	...	...	...	...		4
85	Plantains	...	...	...	...	4 $\frac{1}{2}$ Baskets and 458 Fruits	
86	Guava Fruits	...	...	...	...	Basket	1
87	Melons	...	...	...	...		30
88	Grapes	...	...	...	...	Vissés	21
89	Pumpkins	...	...	...	..		15
90	Grape Juice and Syrup	...	...	...	...	Bottles	12

Statement showing the places inspected and the number of inspections made by the Food Inspector, South Range, during the year 1915.

No.	Description of Inspection.	No. of Inspections made.	Remarks.
1	Markets	...	996
2	Bakeries	...	507
3	Dairies	...	116
4	Tea-clubs	...	562
5	Coffee-clubs and Restaurants	...	791
6	Sweetmeat Stalls	...	587
7	Bazaars and Shops	...	1030
8	Ærated-water Factories	...	201
9	Do. do. Carts	...	89
10	Curry Stalls and Eating Houses	...	357
11	Railway Goods-Sheds	...	83
12	Ice Factory	...	1

List of Food Stuffs destroyed by the Food Inspector, South Range,
during the year 1915.

No.	Name of food stuffs.				Quantity destroyed.	Remarks.
1	Oranges	...	...	...	5½ baskets and 1,399 fruits.	
2	Apples	...	...	...	3 do. 81 do.	
3	Plantains	...	...	...	9 do. 626 do.	
4	Custard Apples	...	...	...	1 basket and 161 do.	
5	Guavas	...	...	...	1 do. 139 do.	
6	Mangoes	...	...	...	12 baskets and 383 do.	
7	Wood Apples	...	...	...	29 bags and 13 do.	
8	Melons	...	...	...	38.	
9	Jack Fruits	...	...	...	4.	
10	Pears	...	...	...	186.	
11	Pomegranates	...	...	...	37.	
12	Mangosteens	...	...	...	119.	
13	Pumloe	...	...	...	1.	
14	Grapes	...	...	...	4 bunches.	
15	Oranges and Apples	...	...	...	½ basket.	
16	Do and Plantains	...	...	...	2½ baskets and 43 fruits.	
17	Mangoes and Plantains	...	...	...	2 baskets.	
18	Bread	..	...	...	297½ loaves and 4 slices.	
19	Parotta	...	...	...	1.	
20	Hoppers	...	...	...	128 and a plateful	
21	Sweets	...	...	...	51 viss, 4 pollams and a basinful.	
22	Oudays	...	...	...	116.	
23	Vadais	...	...	...	347 and 2 trayfuls.	
24	Boiled Beans	...	...	...	2½ measures.	
25	Trash	...	...	...	1 basket, 1 packet and 4 handfuls.	
26	Mutton Puffs	...	...	...	21.	
27	Flour	...	...	...	1½ bags and 1½ lbs.	
28	Mutton	...	...	...	101½ lbs.	
29	Beef	...	...	...	144½ lbs.	
30	Bones	...	...	...	1 basket.	
31	Lungs	...	...	...	7.	

List of Food Stuff destroyed by the Food Inspector, South Range,
during the year 1915—(Continued).

No.	Name of Food Stuff.	Quantity destroyed.	Remarks.
32	Fish (Raw)...	... 1 basket and 3 lbs. and 77 large ones.	
33	Do. (Dried)	... 4 baskets, 48 lbs. and 4 oz.	
34	Prawns	... 24½ baskets and a trayful	
35	Biscuits	... 10 lbs. and 2.	
36	Chocolates	... 29 slabs.	
37	Cashewnuts	... 3 lbs. 1 oz.	
38	Tinned Fruits	... 3 tins.	
39	Do. Milk	... 1 tin.	
40	Ham	... 17 bits.	
41	Bacon	... 1 case.	
42	Chillies	... 2 bags and 2 baskets.	
43	Garlic	... 1½ baskets.	
44	Onions	... 46 bags, 2½ baskets and 43 visses.	
45	Vadagam	... 4¾ maunds.	
46	Turmeric	... 1 basket and 3 maunds, 2 viss and 18 pollams.	
47	Rice Balls	... 1 basket and 18.	
48	Eggs	... 227.	
49	Potatoes	... 14 visses, 23 pollams and 16.	
50	Vegetable Marrow	... 1.	
51	Turnips	... 14.	
52	Chow Chow	... 2	
53	Tomatoes	... 387.	
54	Limes	... 576.	
55	Sour-Coys	... 1 basket and a trayful.	
56	Cocoanuts	... 22.½.	
57	Vegetables	... ½ basket and 11¾ visses.	
58	Cooked Curry	... 66 chatties, 45 plates and 14 lbs	
59	Do. Curry Balls	... 54.	
60	Boiled Eggs	... 17.	
61	Fried Fish	... 2 plates and 11.	
62	Tyre	... 2 measures.	
63	Aerated Water Bottles	... 216.	

Statement showing the number of times, destructions were made by the Food Inspector, South Range, in the markets in the Range, during the year 1915.

No.	Name of Market.		No. of times destructions were made during the year.	Remarks.
1	Jam Bazaar	Market	...	31
2	Chintadripet	do.	...	27
3	Junda	do.	...	22
4	Connemara	do.	..	19
5	Moore	do.	...	19
6	Jubilee	do.	...	18
7	Ellammen Coil	do.	...	17
8	Demellow's Road	do.	...	15
9	Purasawalkam	do.	...	15
10	Mirsaibpet	do.	...	12
11	Royapettah	do.	...	11
12	Smithfield	do.	...	9
13	Coxparcherry Beef	do.	...	8
14	Mylapore	do.	...	8
15	Teynampet	do.	...	7
16	Koravankulam	do.	...	6
17	Chetty's Garden	do.	...	6
18	Mandhavali	do.	...	5
19	Thousand Lights	do.	...	5
20	Bashyam Iyengar's	do.	...	5
21	Nungambakam	do.	...	3
22	Chetput	do.	...	3
23	Egmore	do	...	3

CIRCULAR

It has been a matter of common knowledge and observation that stables where horses are stalled are kept in a most unsatisfactory and insanitary condition, prejudicial to the health of the community at large. The matter has been very carefully considered by a sub-committee specially appointed with the following members—

The President,

Mr. G. A. Natesan,

Mr. Md. Usman Sahib,

Mr. P. M. Sivagnana Mudaliar,

and at their meeting on 12th November 1915, it was resolved that the Health Officer, who also attended the meeting, be required to draw up a scheme for the proper upkeep of the said stables. It was also resolved that the same be circulated broadcast amongst the owners of horses or stables and that a period of three months from the date of issue of the circular be allowed to bring about the necessary alterations or reconstructions of the said stable-houses; and that if after this period no improvements in the directions hereinafter indicated are effected, the defaulters be proceeded against under Section 316 of the Municipal Act, and that in cases where stables are used as dwelling places in contravention of the conditions required thereof, action may be taken under Sections 309 and 310 of the Municipal Act.

The scheme proposed hereinafter is strictly in accordance with the Bye-laws laid down in the Madras Corporation Code regarding premises used for keeping horses, &c. Section 315 of the Municipal Act gives the President general powers of control over stables.

It is therefore desired that the following rules be strictly carried out for the proper upkeep of a stable-house in a sanitary condition:—

1. The floor of every building used or to be used for stabling horses shall be paved or made with suitable material and sloped to the satisfaction of the President so as to prevent any soakage into the ground of urine or other filth. It is suggested that excellent materials for such flooring are paving bricks pointed with cement or vitrified bricks or cement concrete roughened and well rammed in—preferably the first.

2. The floor so made shall be sloped towards a good cement-surfaced drain at a suitable position in the stable.

3. Every drain or means of drainage upon or in connection with the said premises shall be constructed and maintained at all times in good order and efficient action and be connected with the sewer or the street drain as the case may be.

4. *Ventilation*: The standard fixed for a loose box by Veterinarians is 144 sq. ft. of ground space and 1,600 c. ft. of air space. But for purposes of stables owned by the public of Madras, where usually a single horse is concerned, the minimum ground space and air space shall be 120 sq. ft. and 1,200 c. ft. respectively, the minimum breadth and height being at least 9 ft. each; for example, if a stable where one horse is to be stalled has dimensions of 12' x 10' x 10' it will satisfy the objects of this rule. But in the case of stalls where a single row or double rows of horses are concerned the following bye-law shall apply :—

“Stables for horses shall not be less than 6 ft. in height measuring from the floor to the wall-plate, and if for one row of animals, the breadth shall not be less than 9 ft. measuring from the outside of the manger to the opposite wall, and if for a double row of animals not less than 19 ft. measuring from one manger to the other, if the mangers are placed against the external walls, and not less than 18 ft. in breadth measuring from the external walls if the mangers are placed in the centre of the stable, and the space to be allowed to each horse shall not be less than 6 ft. in width.”

The above noted dimensions shall be irrespective of the space taken by the vehicles and the individuals occupying the premises.

5. Each stable shall be so constructed or altered as to admit sufficient light and air as required in clause 4 above.

6. Arrangements shall be made for thorough and daily cleansing of the stable.

7. A receptacle in which all horse dung and other rubbish is to be stored shall be provided, the contents of which shall be emptied into the rubbish carts of the Corporation or the receptacle be placed in a suitable place for easy access by the Municipal Sweeper.

8. As regards the question of human beings living in the same room as horses, it is pointed out that sanitarily the practice is certainly objectionable; but if it be found absolutely impracticable to avoid the practice, measures must be taken to see that the stables are so arranged as to minimise, as far as possible, the insanitary condition associated with such congregation by adopting the following suggestions :—

(a) The living room or rooms for the syce shall be separated from the room occupied by an animal by a partition of brick, galvanized iron, wood, bamboo thatti or other suitable materials and suitable arrangements for ventilation and light be made in accordance with Section 208 of the Madras Corporation Code whereby 28 sq. ft. of superficial and 250 c. ft. of air space are necessary for each occupant of any building or room; or every dwelling room shall have a minimum of 80 sq. ft. of ground space.

(b) Every owner or occupier of a stable shall arrange for proper lavatory accommodation for syces living in the stables. It is not essential that such accommodations should be part of the stable buildings. The Health Department is at all times prepared to offer advice to any one who seeks it in connection with effecting any alterations or additions in the existing stables.

K. RAGHAVENDRA RAO, B.A., M.B. & C.M.,

Ag. Health Officer.

J. C. MOLONY, I. C. S.,

President,

Corporation of Madras.

[**REPORT**]

Annual Report.

OF THE HEALTH OFFICER

CORPORATION OF MADRAS

HEALTH DEPARTMENT

FOR

1915



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